

TYPE SPECIMENS OF MOLLUSCA IN THE UNIVERSITY ZOOLOGICAL MUSEUM, COPENHAGEN

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Abstract. The present study includes 60 species of marine Mollusca which were described and illustrated by Martini & Chemnitz in the "Systematisches Conchylien-Cabinet" between the years 1769-1795, with the exception of the type-specimen of *Voluta virgo* Linnaeus, from the Spengler collection. The type-specimens of the species dealt with are primarily gastropods belonging to the families Fissurellidae, Patellidae, Trochidae, Stomatellidae, Turbinidae, Neritidae, Naticidae, Cymatiidae, Muricidae, Buccinidae, Melongenidae, Fasciolaridae, Mitridae, Vexillidae, Turridae, Conidae and the bivalve family Veneridae.

During a recent visit to the University Zoological Museum in Copenhagen, I had the opportunity to examine 60 type-specimens of species illustrated in Martini & Chemnitz's "Neues systematisches Conchylien-Cabinet". Most of the specimens illustrated in this work from 1780-1795, originated from the Spengler and Moltke collections. These historical types, which have already been segregated from the general collection, are housed in a separate cabinet in a fire-proof room of the Museum. The collection is fairly large and particularly rich in bivalves, and most lots bear the original old and also new labels.

The enumeration of the 60 species dealt with in this paper follows in systematic order. A brief account of the history of the "Conchylien-Cabinet" and the collections associated with it, is given.

HISTORY OF THE "CONCHYLIEN-CABINET"

Friedrich Heinrich Wilhelm Martini (1729-1778), a physician from Hamburg, and ardent conchologist, found the lack of readily available books on conchology a source of frustration. In the latter half of the 18th century he decided to author his own work on conchology, which he envisaged would run into several volumes and treat all the then known species of molluscs. G. N. Raspe (1712-1785), a publisher from Nürnberg, promised to publish the work, and well-known collectors of the day, e.g. Feldmann, Meuschen, Bolten and Meiers, promised assistance with finance and specimens.

The first volume of the "Neues systematisches Conchylien-Cabinet" (= The new systematic Conchology-Cabinet) appeared in 1769, and contained 408 pages and 31 colour plates. The size of the publication was $9\frac{1}{4} \times 11\frac{1}{2}$ inches (23.5 x 29.2 cm), the text was in German Gothic, and the engraved, hand-coloured plates were printed on laid, watermarked "Van Gelder" paper with wide margins. The specimens illustrated in these plates came from Martini's own collection, from the Royal Academy

of Science, Berlin, and private collections of Eller, Conrad, Feldmann and Spengler. The artist for the plates was A. F. Happe, painter of the Berlin Academy, and the engraver was C. B. Glassbach.

After the appearance of the first volume, several buyers suggested that they expected plates of better quality for a price of 90-100 Thalers. Chemnitz replied and acknowledged that the plates were no masterpieces, but because of the sheer size of the work, and in order to keep the price down, the artists did not exert themselves to capacity. With the appearance of volume 2 in 1773, the quality of the plates improved considerably although the artists remained the same.

Before the appearance of volume 3 in 1777, Martini suffered a painful illness from which he took 2 years to recuperate. The artists for volume 3 were J. Nusbiegel and O. Bischoff, and J. S. Leitner was the engraver.

A year after publication of volume 3, Martini died, and Raspe the publisher, Mrs Martini and her adviser Dr Brehmer chose Johann Hieronymous Chemnitz (1730-1800) to continue the authorship of the "Conchylien-Cabinet". Chemnitz, a German born in Magdeburg, came to Denmark in 1768 as a pastor to the German church in Copenhagen, and already prior to his arrival was a keen student of conchology who had his own collection and was ideally suited to carry on the authorship. Chemnitz, however, refused initially and so did his close friend Lorenz Spengler (1720-1807). Spengler was born in Schaffhausen, Switzerland, and came to Denmark in 1743 as a cabinet-maker and wood-turner to the Danish Court. His knowledge of the secret art of making artificial teeth brought him a considerable income which enabled him to form a fine shell collection through purchase of choice specimens. After their refusal, the publisher then offered the authorship to Walch in Jena, Baron von Zorn in Danzig and Meuschen in the Hague, but they all politely declined. Prof. Boddaert from Leiden, however, was willing to undertake the task provided that he could write the text in Dutch and the publisher would have it translated into German. The terms were found to be unacceptable, and Mrs Martini once again approached Chemnitz imploring him to carry on her husband's legacy. Chemnitz finally relented after having been assured of Spengler's assistance.

When Chemnitz assumed the authorship, he found the 38 plates for volume 4 already completed but not a single line of text had been written. It took Chemnitz one year to write the text and volume 4 was published in 1780. The artist for this volume was Krüger and J. S. Leitner the engraver. Chemnitz promised plates of a better quality in the future by employing a new artist.

Volume 5 appeared in 1781, and the new artist was Franz Scheitel (or Scheidl) from Vienna. Scheitel was the illustrator for Baron N. J. von Jacquin's botanical works, developed eye-trouble in the process, was refused a pension by the Austrian state, and accepted Chemnitz's offer to illustrate the plates for volumes 5-9.

Volume 6 appeared in 1782, and it will be found that some of the plates in this volume are well below standard. Volume 7 was published in 1784 and volume 8 in 1785. Chemnitz reports that Nusbiegel the engraver was employed for the colouring of the figures so that there would be no cause for complaint about the inferior quality of the plates. Volume 9 was published in 1786, and Scheitel the artist returned to his

family in Vienna. The plates for volume 10, which appeared in 1788, were executed by J. P. Degen and the engraver was G. Vogel. Some time after 1790, the Viennese artist Scheitel arrived unannounced at Chemnitz's house in Copenhagen, and in order to provide him with a chance to earn his living, Chemnitz decided to bring out volume 11, containing mainly additions to the previous volumes. The last volume finally appeared in 1795.

The completed 11 volumes contain a total of 4008 pages and 406 plates. Each volume had from 312 to 434 pages and from 31 to 56 plates. The plates in volumes 1-5 were numbered consecutively from 1-193 and in volumes 6-11 from 1-213. Chemnitz intended to publish a catalogue of all species described in the 11 volumes but he died 5 years after the completion of volume 11. This catalogue did not appear until 1840 under the authorship of L. Pfeiffer. An additional twelfth volume in the first edition of the "Conchylien-Cabinet" appeared in 1829 under the authorship of H. G. Schubert and J. A. Wagner, and was published by Bauer & Raspe in Nürnberg.

This giant work, which took 26 years to complete, has been placed on the Official List of Rejected Works in Zoology by the International Commission on Zoological Nomenclature (1958) because the authors did not apply the principles of binominal nomenclature. Martini and Chemnitz's illustrations, however, were cited and names often taxonomically validated by Gmelin (1791), Röding (1798), Holten (1802), Link (1807), Dillwyn (1817), Schumacher (1817), Anton (1839), Pfeiffer (1840), Mörch (1852-53) and other authors.

HISTORY OF THE COLLECTIONS

The Martini collection

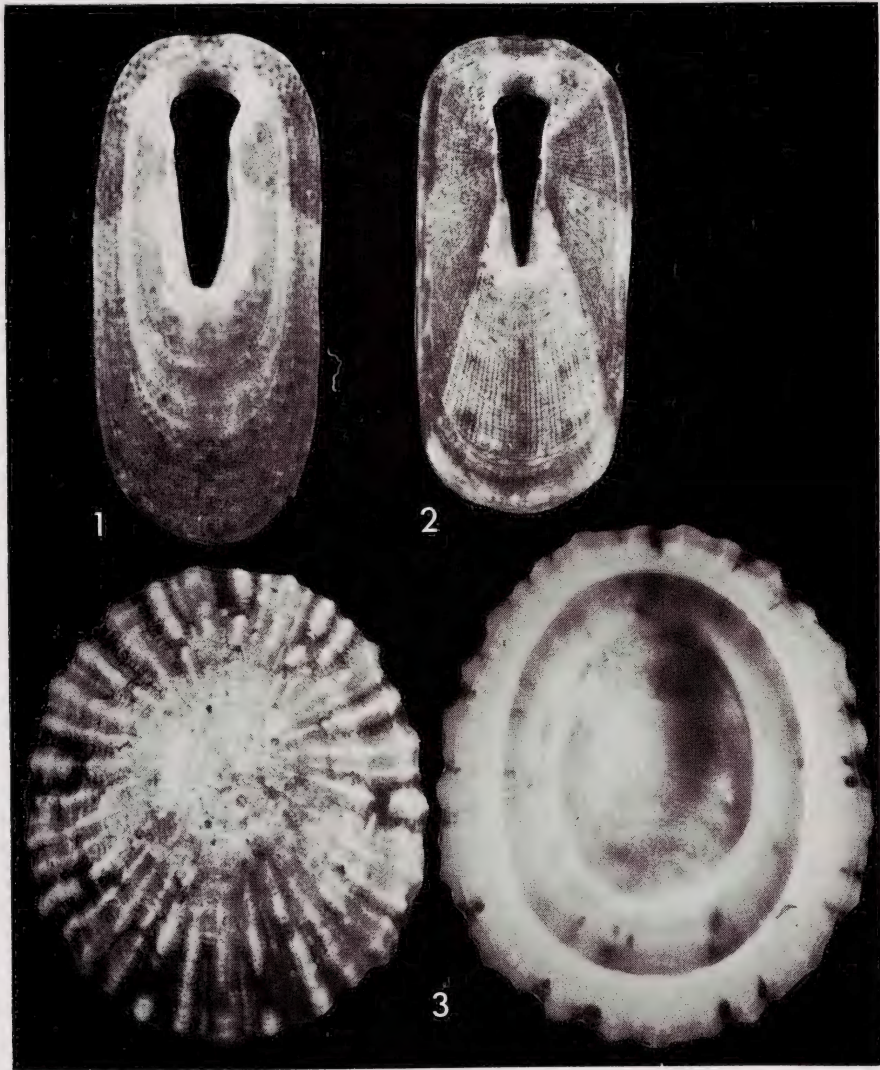
After Martini's death in 1778, the collection of shells became the property of Count von Matuschka from Breslau, Germany, who purchased the collection for 2,500 Reichsthaler, complete with catalogue. According to Pfeiffer (1840), the original specimens owned by Martini and illustrated in the first 4 volumes of the "Conchylien-Cabinet", were at that time the property of Pfeiffer's brother-in-law, a Hermann Nathusius from Hundisburg. When or how Nathusius acquired the collection is unknown and the whereabouts of Martini's collection remains a mystery.

The Chemnitz collection

It is curious to find that after Chemnitz's death the collection was not included in the Royal Natural History Museum but was put up for public auction in Copenhagen. H. S. Holten, a one-time tutor to King Christian VIII of Denmark and for a short time inspector of the Royal Natural History Museum, prepared the catalogue of the sale, which contained 1244 "type lots" of molluscs. Originally advertised for sale on the 7th December 1802, the sale was postponed to the 7th February 1803. Although not known for sure, it is possible that some specimens were purchased at the Chemnitz auction for the Museum.

The Moltke collection

The collection was established around 1750 by Count A. G. Moltke and later continued by his son J. G. Moltke. After the Napoleonic wars in Europe, Denmark went bankrupt and the University found itself in difficulties. In order to assist the University, Count J. G. Moltke purchased the University Natural Theater, amalgamated it with his own collection, and in 1810 presented the two collections to the University.



Figs. 1-3. 1, 2. Syntypes of *Macroschisma macroschisma* (Holten). 1. Length 21.0 mm. 2. Length 16.1 mm. 3. Holotype of *Cellana tramoserica* (Holten); length 37.0 mm.

The Spengler collection

In 1796 a committee was appointed under Abildgaard for the purpose of establishing the Royal Natural History Museum, an event which took place in 1805. The Royal Natural History Museum purchased several collections, and in 1805, two years before his death, acquired Spengler's collection. This Museum was finally amalgamated in 1867 with the University Zoological Museum and occupied a new building at the old University site in the centre of Copenhagen. This building was in use until the collections were transferred to the present building of the University Zoological Museum in 1963. The Museum also acquired King Christian VIII collection after his death in 1848.

TYPE SELECTION

Gmelin (1791) did not base his descriptions on actual specimens before him, but repeated, often *verbatim*, the description of other authors and cited appropriate illustrations for his new species. Provided that only a single specimen of the species illustrated and cited by Gmelin is present in the Spengler-Moltke collection, this specimen should be regarded as the holotype. In cases where illustrations by other authors were cited in addition to those by Chemnitz, the specimen or specimens are considered to be syntypes only, but qualify for lectotype selection.

Röding (1798) did not offer an actual diagnosis of new species established in his sales catalogue but simply cited illustrations which appeared to match the actual specimens before him from the Bolten collection. All type-specimens of species validated by Röding and referred to an illustration in Chemnitz, qualify only as syntypes.

Lamarck, in several of his publications, based his description of new species on specimens in his own collection and many of his types are still extant in the Muséum d'Histoire Naturelle, Geneva, and the Muséum National d'Histoire Naturelle, Paris.

Dillwyn (1817) in the Introduction to his work states that he was attempting to arrange a small cabinet of shells, and it is probable that some of these specimens may have served as the basis for his description of new species. The same applies to Schumacher (1817) who not only owned specimens but also had access to the original Spengler-Moltke material at the Copenhagen Museum. All specimens of species described by Schumacher which bear the initial "Sch" inside the aperture, can be presumed to have originated from the Schumacher collection, and all other type material from the Spengler-Moltke collection. The type specimens of species described by Dillwyn and referred to specimens in the Spengler-Moltke collection are considered to be only syntypes, as are those species established by Schumacher and referred to Chemnitz, and which were not represented by Schumacher's own specimens.

The synonymy of the species enumerated contains only entries directly pertaining to the type-specimens and subjective synonyms have been omitted in most cases. The specific heading shows the genus-group to which the species is currently assigned. The dimensions cited are height x width or height x width x height of aperture, expressed in mm.

Family FISSURELLIDAE

Macroschisma macroschisma (Holten, 1802) (Figs. 1, 2)

1795. "*Patella macroschisma*" Chemnitz, Syst. Conch. Cab., 11: 184, pl. 197, figs. 1923-24 (Japan) [*non binom.*]
1802. *Patella macroschisma* Holten, Enum. syst. Conch. Chemnitzii, p. 86 (refers to Chemnitz, *op. cit.*, figs. 1923-24 [non Lightfoot, 1786])
1851. *Macroschisma maxima* A. Adams, Proc. Zool. Soc. London, for 1850, pt. 18: 202 (Hab:?)

Dimensions of syntypes: 21.0 x 9.5 mm (the specimen illustrated by Chemnitz) and 16.1 x 7.3 mm; shell with numerous close-set axial threads and spiral striae.

Patella macroschisma Holten, 1802, is a primary homonym of *P. macroschisma* Lightfoot, 1786, and *Macroschisma maxima* A. Adams, 1851, is an available substitute name. The species lives in Japanese waters.

Family PATELLIDAE

Cellana tramoserica (Holten, 1802) (Fig. 3)

1795. "*Patella tramoserica*" Chemnitz, Syst. Conch. Cab., 11: 179, pl. 197, figs. 1912-13 (New South Wales) [*non binom.*]

1802. *Patella tramoserica* Holten, Enum. syst. Conch. Chemnitzii, p. 85 (refers to Chemnitz, *op. cit.*, figs. 1912-13).

Dimensions of holotype: 37.0 x 30.5 mm; shell with whitish, orange and brown ribs, interior tinged with yellow.

The species lives on the southern coastline of Australia.

Family TROCHIDAE

Trochus granularis Röding, 1798 (Fig. 4)

1781. "*Trochus perforatus*" Chemnitz, Syst. Conch. Cab., 5: 96, pl. 170, figs. 1642a, b (*non binom.*)

1798. *Trochus granularis* Röding, Mus. Bolten., p. 81 (refers to Chemnitz, *op. cit.*, figs. 1642a, b)

Dimensions of syntype: 18.2 x 23.4 mm; shell with perforated umbilicus.

Adam & Leloup (1938) place *T. granularis* Röding, in the synonymy of the Indian Ocean *T. radiatus* Gmelin, 1791.

Trochus viridis Gmelin, 1791 (Fig. 5)

1781. "*Trochus perforatus* . . . *novaezeelandiae*" Chemnitz, Syst. Conch. Cab., 5: 97, pl. 170, figs. 1643-44 (New Zealand) [*non binom.*]

1791. *Trochus viridis* Gmelin, Syst. Nat., ed. 13, p. 3572 (refers to Chemnitz, *op. cit.*, figs. 1643-44) [Hab:?]

1853. *Polydonta viridescens* A. Adams, Proc. Zool. Soc. London, for 1851, pt. 19: 154 (refers to Chemnitz, *op. cit.*, figs. 1643-44) [Capul, Philippines = error].

Dimensions of 2 syntypes: 21.5 x 20.6 mm; smaller immature syntype 15.3 x 16.6 mm.

Adams' (1853) and Faustino's (1928) locality indication of "Capul, Philippines" is an error; the species is endemic to New Zealand.

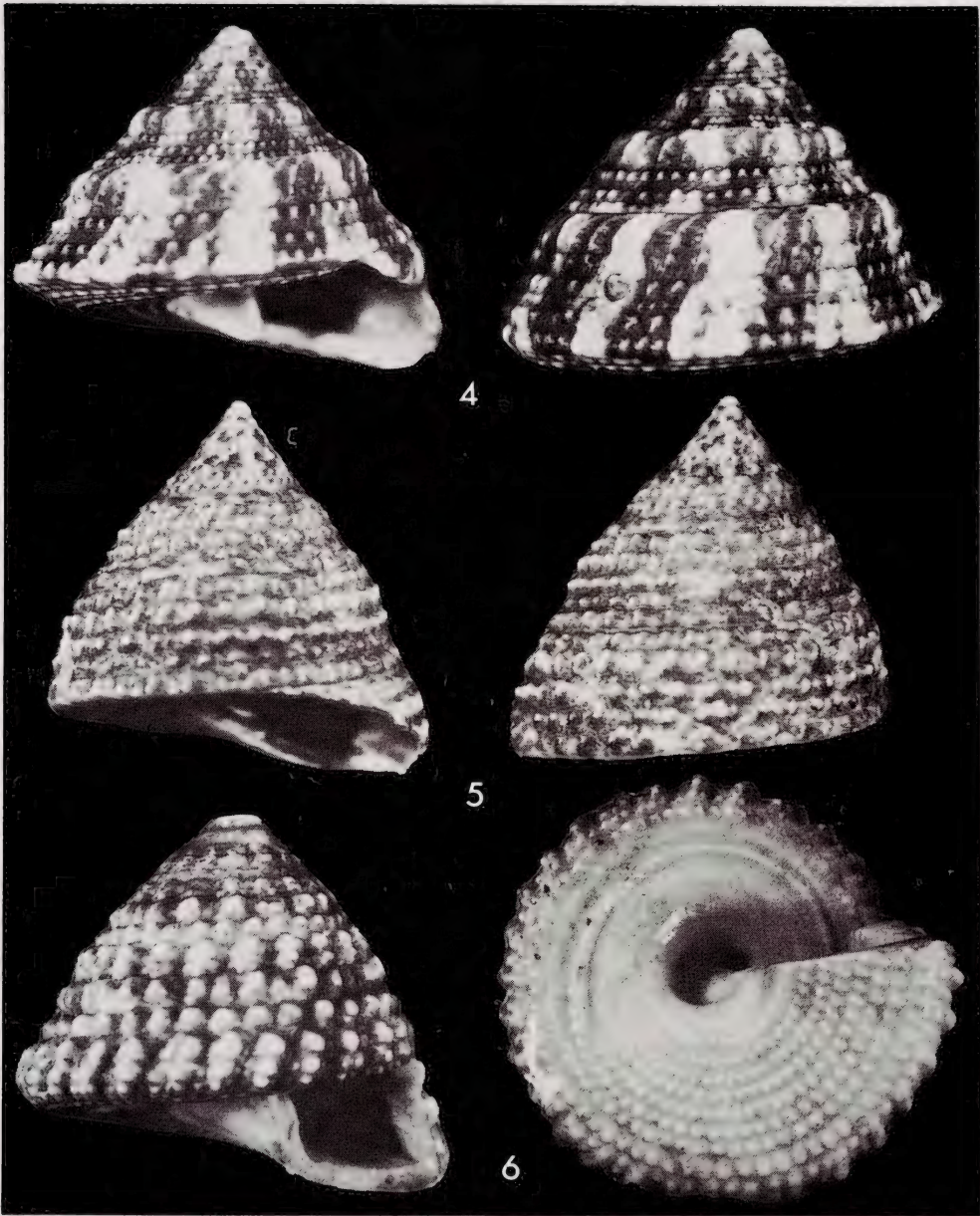
Trochus spengleri Gmelin, 1791 (Fig. 6)

1781. "*Trochus spengleri grandinatus*" Chemnitz, Syst. Conch. Cab., 5: 92, pl. 169, fig. 1631 (Hab:?) [*non binom.*]

1791. *Trochus spengleri* Gmelin, Syst. Nat., ed. 13, p. 3571 (refers to Chemnitz, *op. cit.*, fig. 1631) [Hab:?]

Dimensions of holotype: 23.8 x 27.5 mm; shell with 4 rows of regular-sized nodules, two sutural rows of nodules confluent.

The distribution of the species is unknown, but Pilsbry in Tryon (1889) suggests that it may be an earlier name for the Japanese species *Trochus sacellum* Philippi, 1852.



Figs. 4-6. 4. Syntype of *Trochus granularis* Röding; length 18.2 mm. 5. Syntype of *T. viridis* Gmelin; length 21.5 mm. 6. Holotype of *T. spengleri* Gmelin; length 23.8 mm.

Calliostoma (Maurea) selectum (Dillwyn, 1817)

(Fig. 7)

1795. "*Trochus selectus*" Chemnitz, Syst. Conch. Cab., 11: 168, pl. 196, figs. 1896-97 (coasts of New Zealand) [*non binom.*]
1817. *Trochus selectus* Dillwyn, Desc. cat. Rec. shells, 2: 801 (refers to Chemnitz, *op. cit.*, figs. 1896-97); Wood 1825, Ind. Test., p. 140, pl. 29, fig. 101a.

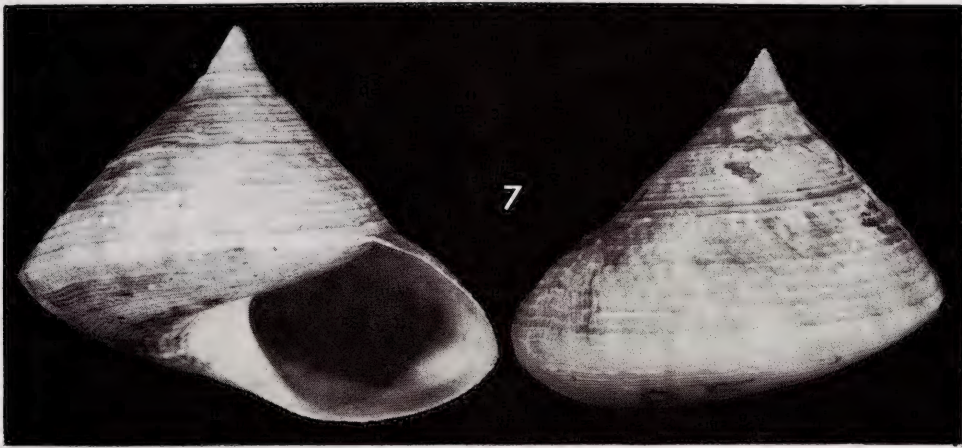


Fig. 7. Syntype of *Calliostoma (Maurea) selectum* (Dillwyn); length 29.7 mm.

1834. *Trochus cunninghami* Griffith & Pidgeon, Anim. Kingd. Bar. Cuvier, Moll. Rad., 12: 600, pl. 1, fig. 7.

Dimensions of syntype: 29.7 x 36.4 mm; shell with 9 spiral threads on the penultimate and 12 threads on the body whorl.

The species is endemic to New Zealand and was previously known as *Maurea cunninghami* (Griffith & Pidgeon). For an expanded synonymy see Cernohorsky (1972).

Diloma novazelandiae (Anton, 1839)

(Figs. 8, 9)

1781. "*Pica imperforata novaezeelandiae*" Chemnitz, Syst. Conch. Cab., 5: 230, pl. 185, figs. 1850-51 (New Zealand) [*non binom.*]
1839. *Turbo novazelandiae* Anton, Verz. Conchyl., p. 58 (refers to Chemnitz, *op. cit.*, fig. 1850 and for var. b fig. 1851).
1846. *Trochus zebrinus* Philippi, Zeit. f. Malakozool., 3: 105.
1853. *Labio pica* A. Adams, Proc. Zool. Soc. London, for 1851, pt. 19: 179 (refers to Chemnitz, *op. cit.*, pl. 175 = error for pl. 185, fig. 1850) [New Zealand].
1946. *Zediloma (Fractarmilla) corrosa zebrina* Powell, Rec. Auckland Inst. Mus., 3 (2): 137, pl. 11, figs. 4, 5 (Western Otago, New Zealand) [*non Trochus zebrinus* Philippi, 1846].

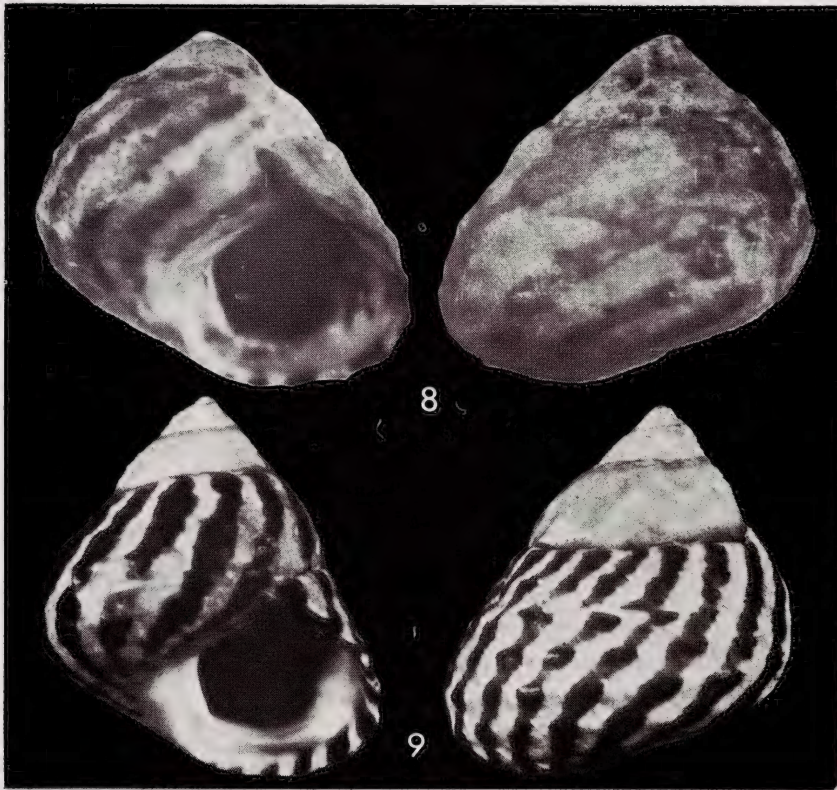
Dimensions of syntype (Chemnitz fig. 1850): 12.0 x 12.5 mm (Fig. 8); other syntype (Chemnitz fig. 1851) 14.0 x 12.5 mm (Fig. 9).

Powell's specific name *zebrina* has been anticipated by *zebrinus* Philippi, 1846, whose species is not only congeneric but conspecific with Powell's. The earliest available substitute name is *Turbo novazelandiae* Anton, 1839. The species produces several clines in New Zealand populations and which have been named *Diloma subrostrata* (Gray, 1835), *D. corrosa* and *D. undulosa*, both of A. Adams, 1853, and *D. plumbea* Hutton, 1883.

Melagraphia lugubris (Gmelin, 1791)

(Fig. 10)

1781. "*Nodulus lugubris minutus*" Chemnitz, Syst. Conch. Cab., 5: 54, pl. 165, fig. 1571 (coasts of southern continents) [*non binom.*]



Figs. 8, 9. Syntypes of *Diloma novaeselandiae* (Anton). 8. Length 12.0 mm.
9. Length 14.0 mm.

1791. *Trochus lugubris* Gmelin, Syst. Nat., ed. 13, p. 3538 (refers to Chemnitz, *op. cit.*, fig. 1571) [Southern Ocean].
1791. *Turbo aethiops* Gmelin, Syst. Nat., ed. 13, p. 3596 (refers to Born, 1780, p. 340, vig. fig. b and Chemnitz, vol. 5, pl. 182, figs. 1820-21) [Hab:?].

Dimensions of holotype: 12.3 x 14.2 mm; shell with 5 spiral cords on the penultimate and 12 broader cords on the body whorl, cords crossed by oblique striae. Umbilicus imperforate, edge of columella orange, spiral cords spotted with white.

Both specific names are currently in use in New Zealand malacological literature, but the taxon *Trochus lugubris* Gmelin, is being applied to a different monodontine species. The New Zealand species described and illustrated by Tryon (1889) and all subsequent authors as "*Monodonta lugubris* (Gmelin)" is not Gmelin's species but is the species subsequently named *Trochus sulcatus* Wood, 1828 (*non* Lamarck, 1804) = *T. cingulatus* Quoy & Gaimard, 1833 (*non* Brocchi, 1814) = *T. bicanaliculatus* Dunker in Philippi, 1844 = *T. gaimardi* Philippi, 1846 = *T. bernardi* Récluz, 1852 = *Anisodiloma lenior* Finlay [1927]. Although *Trochus lugubris* Gmelin has page precedence over *Turbo aethiops* Gmelin, the latter name is so firmly entrenched in malacological literature that a substitution of *T. lugubris* for *Turbo aethiops* is undesirable. The *Trochus lugubris* of authors, however, will have to be replaced by the next valid available taxon, i.e. *Trochus bicanaliculatus* Dunker in Philippi, 1844.

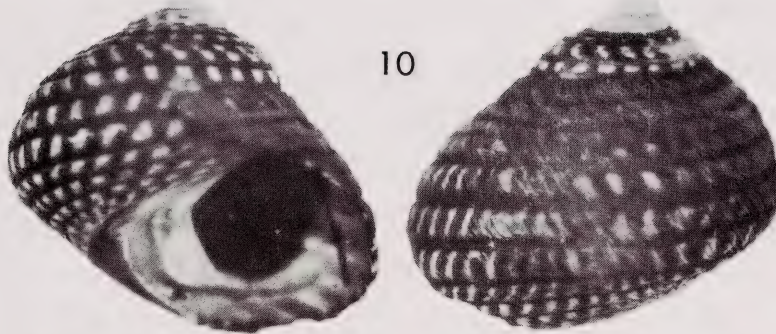


Fig. 10. Holotype of *Melagraphia lugubris* (Gmelin); length 12.3 mm.

The genus-group *Neodiloma* Fischer, 1885 (type-species *Turbo aethiops* Gmelin) and *Anisodiloma* Finlay, [1927] (type-species *Trochus lugubris* Gmelin), become synonyms of *Melagraphia* Gray, 1847 (type-species *Turbo aethiops* Gmelin).

Tegula (*Chlorostoma*) argyrostoma (Gmelin, 1791) (Fig. 11)

1781. "*Trochus imperforatus niger*" Chemnitz, Syst. Conch. Cab., 5: 51, pl. 165, figs. 1562-3 (South Seas or vicinity = error) [*non binom.*]
 1791. *Trochus argyrostomus* Gmelin, Syst. Nat., ed. 13, p. 3583 (refers to Chemnitz, *op. cit.*, figs. 1562-63) [Southern Ocean = error].
 1798. *Turbo lithantrax* Röding, Mus. Bolten., p. 81 (refers to Chemnitz, *op. cit.*, figs. 1562-63).

Dimensions of holotype: 34.1 x 38.3 mm; shell sculptured with slanting, curved axial ribs; almost black in colour and with a rusty-brown band at sutures, base brown, becoming silvery towards aperture, umbilicus imperforate.

The various locality indications of South Seas or New Zealand are incorrect. The species is commonly found in Japan and the Philippine Islands.

Family STOMATELLIDAE

Stomatia imperforata (Gmelin, 1791) (Fig. 12)

1779. *Stomatia phymotis* Helbling, Abh. Privatg. Böhmen, 4:124, pl. 2, figs. 34, 35.
 1788. "*Haliotis imperforata*" Chemnitz, Syst. Conch. Cab., 10: 309, pl. 166, figs. 1600-01 (Red Sea) [*non binom.*]
 1791. *Haliotis imperforata* Gmelin, Syst. Nat., ed. 13, p. 3690 (refers to Meuschen, Helbling and Chemnitz, *op. cit.*, figs. 1600-01 [India]).

Dimensions of syntype: 29.3 x 33.0 mm.

Haliotis imperforata Gmelin, 1791, is a synonym of *Stomatia phymotis* Helbling, 1779. The species lives in the tropical Indo-Pacific.

Pseudostomatella papyracea (Gmelin, 1791) (Fig. 13)

1781. "*Cochlea lunaris papyracea*" Chemnitz, Syst. Conch. Cab., 5: 215, pl. 182, figs. 1817-19 (East Indies) [*non binom.*]

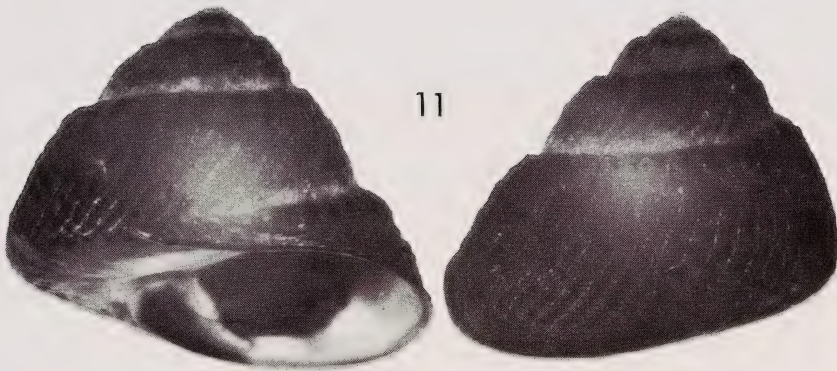
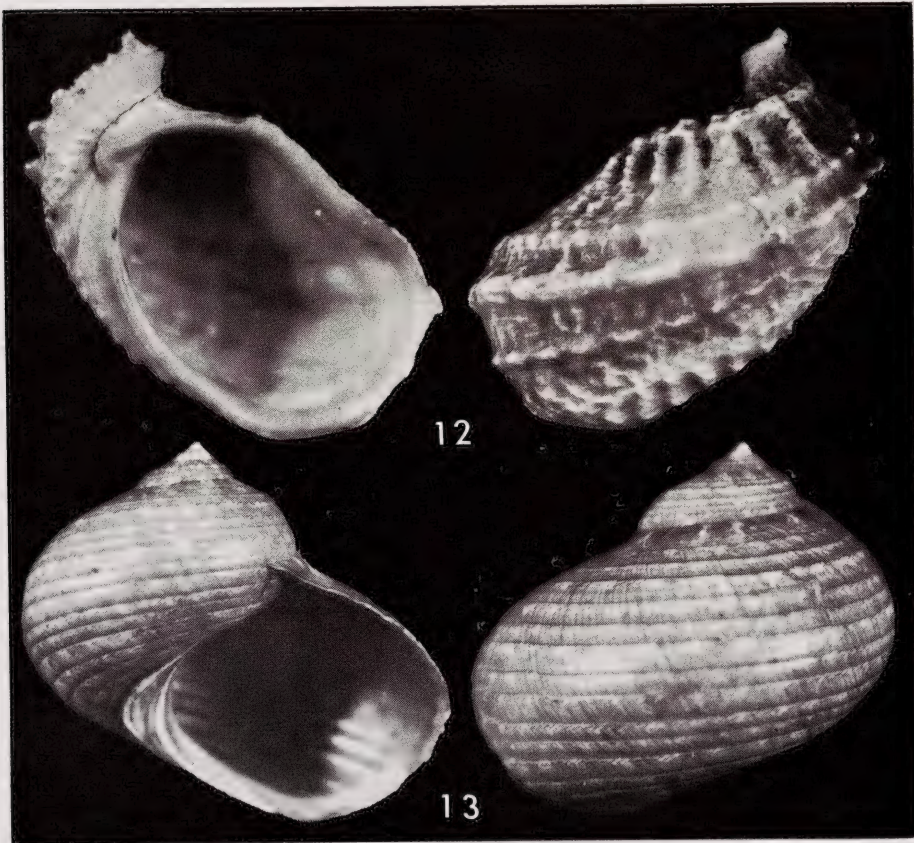


Fig. 11. Holotype of *Tegula (Chlorostoma) argyrostoma* (Gmelin); length 34.1 mm.



Figs. 12, 13. 12. Syntype of *Stomatia imperforata* (Gmelin); length 29.3 mm. 13. Holotype of *Pseudostomatella papyracea* (Gmelin); length 20.3 mm.

1791. *Turbo papyraceus* Gmelin, Syst. Nat., ed. 13, p. 3596 (refers to Chemnitz, *op. cit.*, figs. 1817-18 [Hab:?])

Dimensions of holotype (Chemnitz figs. 1817-18): 20.3 x 24.3 mm; shell with 7 elevated spiral cords on the penultimate and 16 cords on the body whorl.

P. papyracea is an Indo-Pacific species. The specimen illustrated by Chemnitz (*op. cit.*) in fig. 1819 is a different stomatellid species.

Family TURBINIDAE

Turbo radiatus Gmelin, 1791 (Fig. 14)

1781. "*Argyrostomus maris rubri*" Chemnitz, Syst. Conch. Cab., 5: 199, pl. 180, figs. 1788-89 (Red Sea) [*non binom.*]
1791. *Turbo radiatus* Gmelin, Syst. Nat., ed. 13, p. 3594 (refers to Chemnitz, *op. cit.*, figs. 1788-89) [Red Sea].

Dimensions of holotype: 53.5 x 50.2 mm; shell sculptured with 8 spiral cords on the penultimate and 19 cords on the body whorl, 1 keeled cord on the penultimate and 4 cords on the body whorl spinose; aperture silvery, operculum smooth.

Adam & Leloup (1938) consider this species from the Indian Ocean, to be a valid taxon and supply a detailed synonymy.

Turbo imperialis Gmelin, 1791 (Fig. 15)

1781. "*Cochlea lunaris imperialis*" Chemnitz, Syst. Conch. Cab., 5: 200, pl. 180, fig. 1790 (China Seas) [*non binom.*]
1791. *Turbo imperialis* Gmelin, Syst. Nat., ed. 13, p. 3594 (refers to Chemnitz, *op. cit.*, fig. 1790) [China].

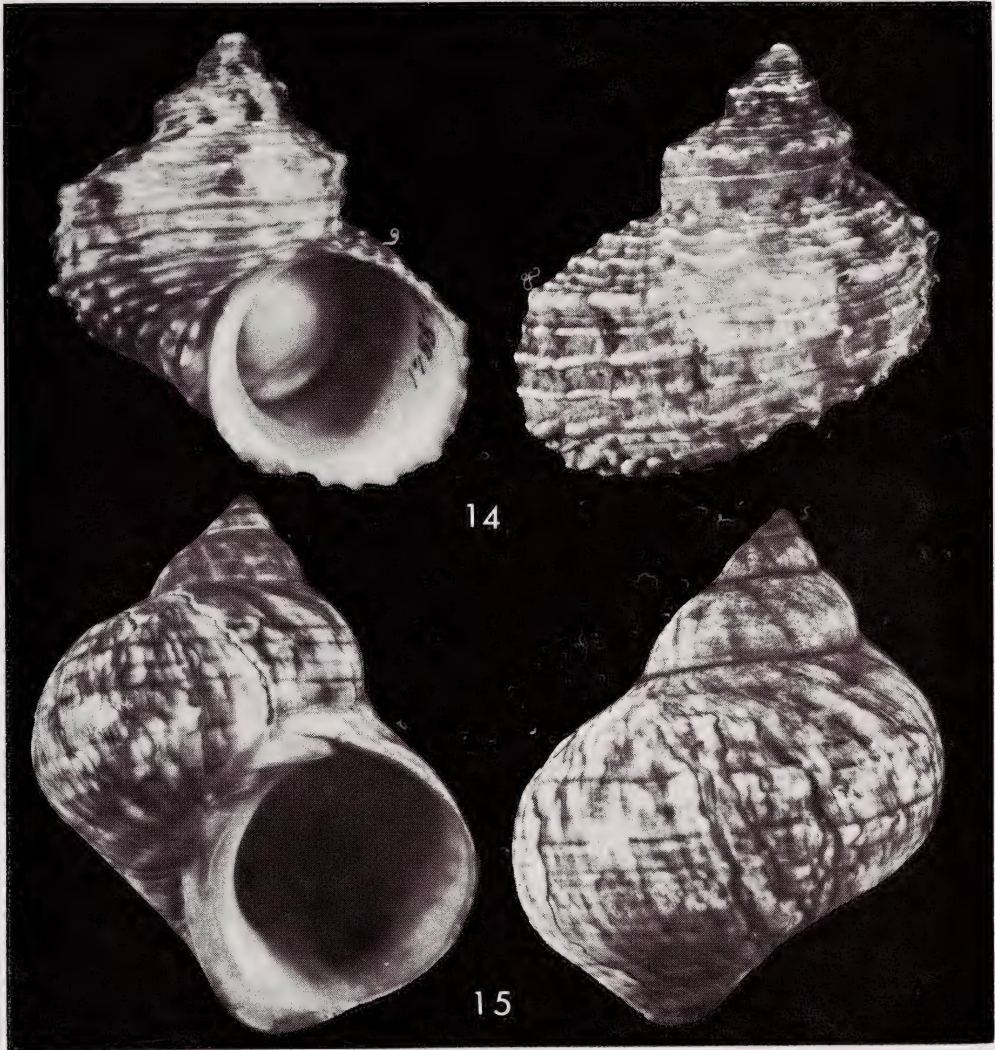
Dimensions of holotype: 94.2 x 80.8 mm; shell smooth, umbilicus imperforate, decorated green with dark green spiral lines.

The species is similar to *Turbo petholatus* Linnaeus, 1758, and is sometimes considered to be a subspecies of the latter. The external colouring is constantly different, and the operculum in *T. imperialis* is white, matt and minutely roughened, whereas it is smooth, glazed, shining and tinged with purple in *T. petholatus*. The species ranges from Japan to Australia, and is moderately frequent at Caloundra, Queensland.

Turbo argentatus (Röding, 1798) (Fig. 16)

1781. "*Argyrostomus canaliculatus*" Chemnitz, Syst. Conch. Cab., 5: 202, pl. 181, fig. 1794 (East Indies) [*non binom.*]
1791. *Turbo canaliculatus* Gmelin, Syst. Nat., ed. 13, p. 3594 (refers to Regenfuss, vol. 1, pl. 10, fig. 44 and Chemnitz, *op. cit.*, fig. 1794) [India] (*non* Hermann, 1781).
1798. *Lunatica argentata* Röding, Mus. Bolten., p. 102 (refers to Chemnitz, *op. cit.*, fig. 1794).

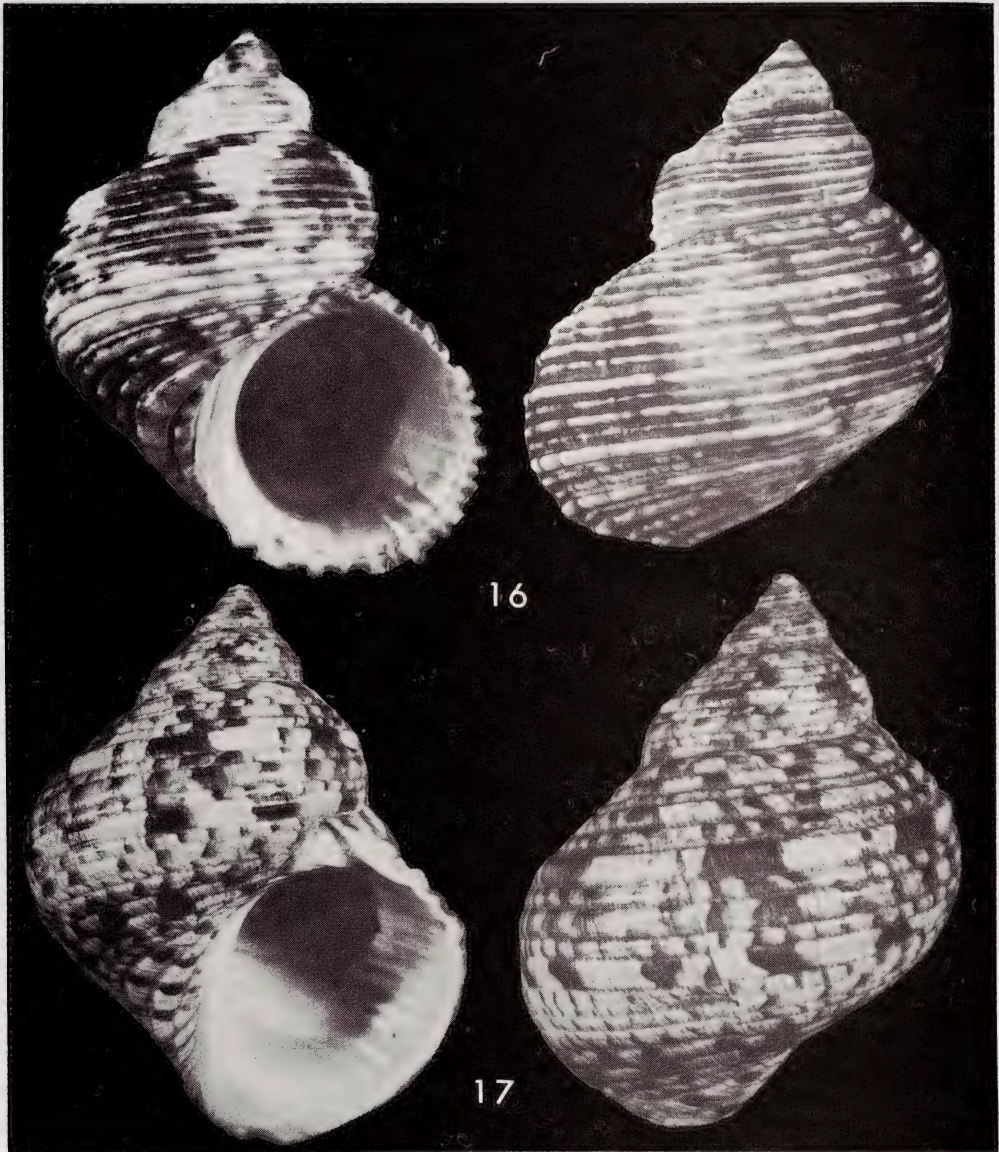
Dimensions of probable syntype: 72.0 x 61.0 mm; shell with 11 prominent spiral cords on the penultimate and 24 cords on the body whorl, interspaces of cords striate, umbilicus imperforate, aperture silvery.



Figs. 14, 15. 14. Holotype of *Turbo radiatus* Gmelin; length 53.5 mm. 15. Holotype of *T. imperialis* Gmelin; length 94.2 mm.

Chemnitz's solitary type specimen does not agree with the illustrated figure, but agrees perfectly with his description. Chemnitz (*op. cit.*) describes the species as strongly sculptured with channels, gutters and striae, and remarks that the colour is white (creamy-white in the actual specimen) and marbled with dark green or reddish-brown flames and spots. The illustration in Chemnitz does not show the heavy sculpture and appears an overall green.

Turbo argentatus appears to be a variant of the Indo-Pacific *T. argyrostomus* (Linnaeus, 1758).



Figs. 16, 17. 16. Syntype of *Turbo argentatus* (Röding); length 72.0 mm. 17. Holotype of *T. sparverius* Gmelin; length 55.7 mm.

***Turbo sparverius* Gmelin, 1791**

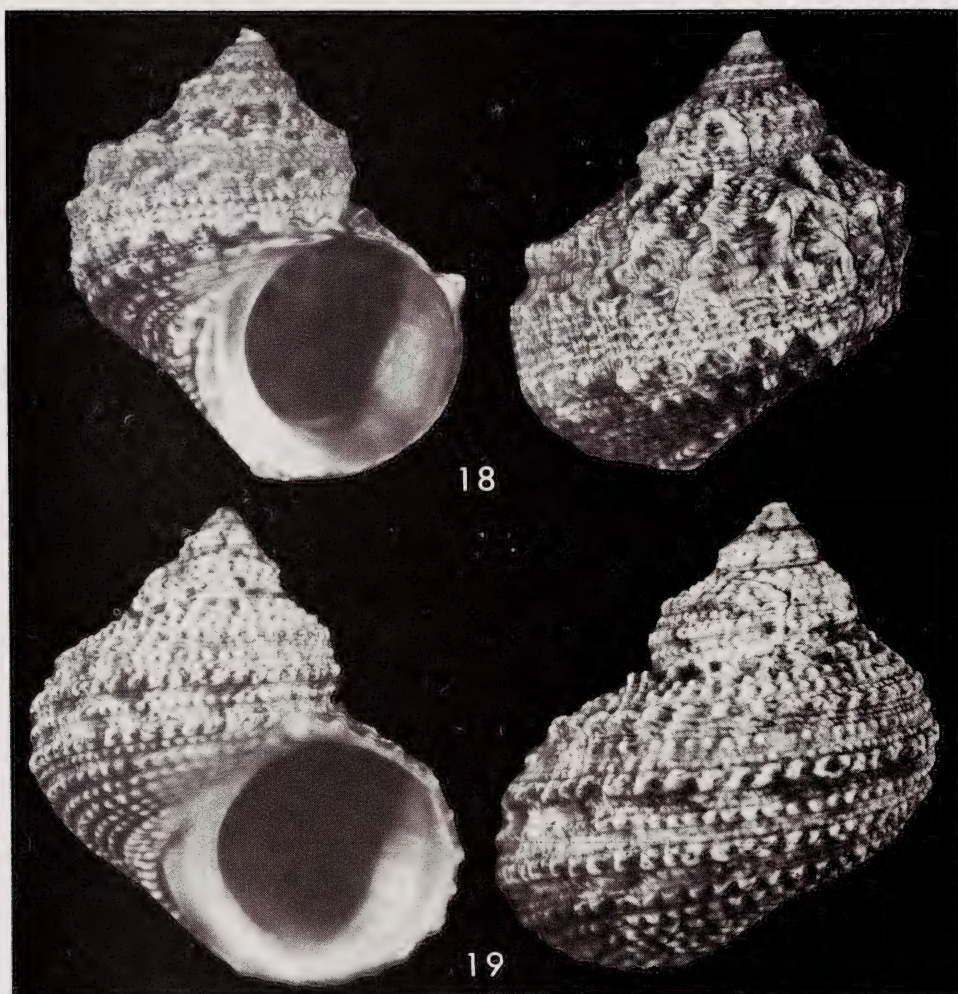
(Fig. 17)

1781. "*Sparverius sive nesus*" Chemnitz, Syst. Conch. Cab., 5: 204, pl. 181, fig. 1798 (East Indies) [*non binom.*]

1791. *Turbo sparverius* Gmelin, Syst. Nat., ed. 13, p. 3594 (refers to Chemnitz, *op. cit.*, fig. 1798) [India].

Dimensions of holotype: 55.7 x 44.0 mm; shell with 7 cords on the penultimate and 21 cords on the body whorl, 5th or 6th presutural cord on body whorl prominent.

The species lives in the tropical Indo-Pacific.



Figs. 18, 19. 18. Holotype of *Turbo mollkianus* Gmelin; length 41.7 mm. 19. Holotype of *T. crenulatus* Gmelin; length 30.3 mm.

Turbo mollkianus Gmelin, 1791

(Fig. 18)

1781. "*Cochlea lunaris mollkiana*" Chemnitz, Syst. Conch. Cab., 5: 205, pl. 181, figs. 1799-1800 (Hab:?) [*non binom.*]
1791. *Turbo mollkianus* Gmelin, Syst. Nat., ed. 13, p. 3595 (refers to Chemnitz, *op. cit.*, figs. 1799-1800) [Hab:?].
1798. *Lunatica tuberculata* Röding, Mus. Bolten., p. 102 (refers to Chemnitz, *op. cit.*, figs. 1799-1800).

Dimensions of holotype: 41.7 x 38.7 mm; shell with 9 granulose cords on the penultimate and c. 30 on the body whorl.

There are 2 smaller specimens in the container with the type-specimen, but these are clearly later additions. At the time of description, Chemnitz (*op. cit.*) stated that

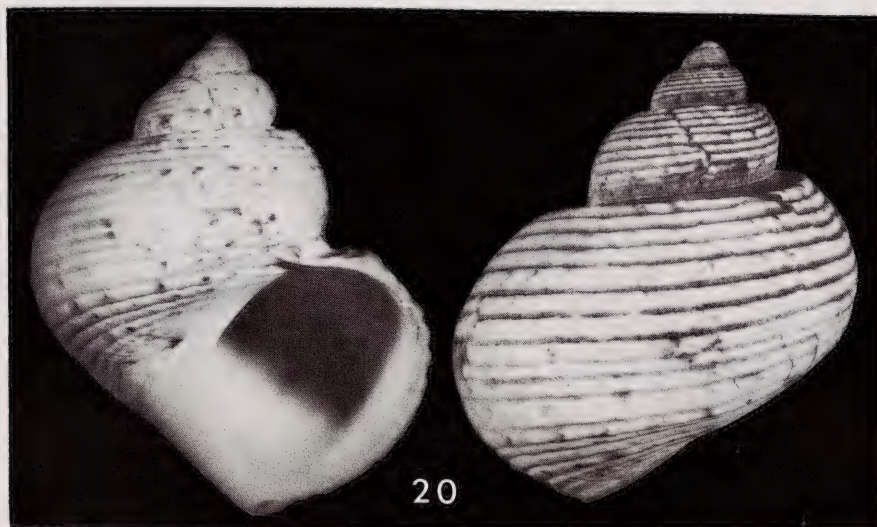


Fig. 20. Holotype of *Turbo spenglerianus* Gmelin; length 46.8 mm.

only a single specimen was known, and this was purchased for over 35 guilders at the Homoet auction in 1757 in Amsterdam, by Count Moltke.

Turbo moltkianus is very similar to *T. saxosus* Wood, 1828, from the west coast of America, and according to Pilsbry in Tryon (1888) the species lives on the west coast of Mexico.

Turbo crenulatus Gmelin, 1791

(Fig. 19)

1781. "*Cochlea lunaris crenulata*" Chemnitz, Syst. Conch. Cab., 5: 212, pl. 182, figs. 1811-12 (probably West Indies) [*non binom.*]

1791. *Turbo castanea* Gmelin, Syst. Nat., ed. 13, p. 3595 (American Seas).

1791. *Turbo crenulatus* Gmelin, *ibid.*, p. 3595 (refers to Chemnitz, *op. cit.*, figs. 1811-12) [Hab:?].

1798. *Lunatica granulata* Röding, Mus. Bolten., p. 102 (refers to Chemnitz, *op. cit.*, figs. 1811-12) [*non Turbo granulatus* Gmelin, 1791].

Dimensions of probable holotype: 30.3 x 28.0 mm; shell with 9 crenulate cords on the penultimate and 23 cords on the body whorl.

The species lives in the Caribbean and according to Warmke & Abbott (1961) is a synonym of *Turbo castanea* Gmelin, 1791.

Turbo spenglerianus Gmelin, 1791

(Fig. 20)

1781. *Turbo canaliculatus* Hermann, Naturforscher, 16: 52.

1781. "*Cochlea lunaris spengleriana*" Chemnitz, Syst. Conch. Cab., 5: 206, pl. 181, figs. 1801-02 (Oriental Seas = error) [*non binom.*]

1791. *Turbo spenglerianus* Gmelin, Syst. Nat., ed. 13, p. 3595 (refers to Chemnitz, *op. cit.*, figs. 1801-02) [Indian Ocean = error].

1817. *Turbo spengleri* Schumacher, Ess. nouv. syst., p. 198 (refers to Chemnitz, *op. cit.*, figs. 1801-02).

Dimensions of holotype: 46.8 x 39.1 mm; shell with 10 spiral cords on the penultimate and 18 cords on the body whorl, sutures broad and concave, spiral cords maculated with orange and brown.

T. spenglerianus Gmelin, 1791, is a synonym of *T. canaliculatus* Hermann, 1781, from the Caribbean.

Turbo (Lunella) coronatus Gmelin, 1791 (Fig. 21)

1781. "*Corona reclusa*" Chemnitz, Syst. Conch. Cab., 5: 201, pl. 180, figs. 1791-92 (Straits of Malacca and Nicobar Ids.) [*non binom.*]
1791. *Turbo coronatus* Gmelin, Syst. Nat., ed. 13, p. 3594 (refers to Chemnitz, *op. cit.*, figs. 1791-92 [Malacca]).
1798. *Lunella viridana* Röding, Mus. Bolten., p. 103 (refers to Chemnitz, *op. cit.*, figs. 1791-93).

Dimensions of holotype (Chemnitz figures 1791-92): 41.0 x 45.8 mm; shell with 4 rows of knobby spines and 3 rows of corrugated basal cords on the body whorl, and 1 large nodulose cord adjoining concave and smooth columella.

The species lives in the China Seas and the Indian Ocean.

Turbo (Lunella) granulatus Gmelin, 1791 (Figs. 22, 23)

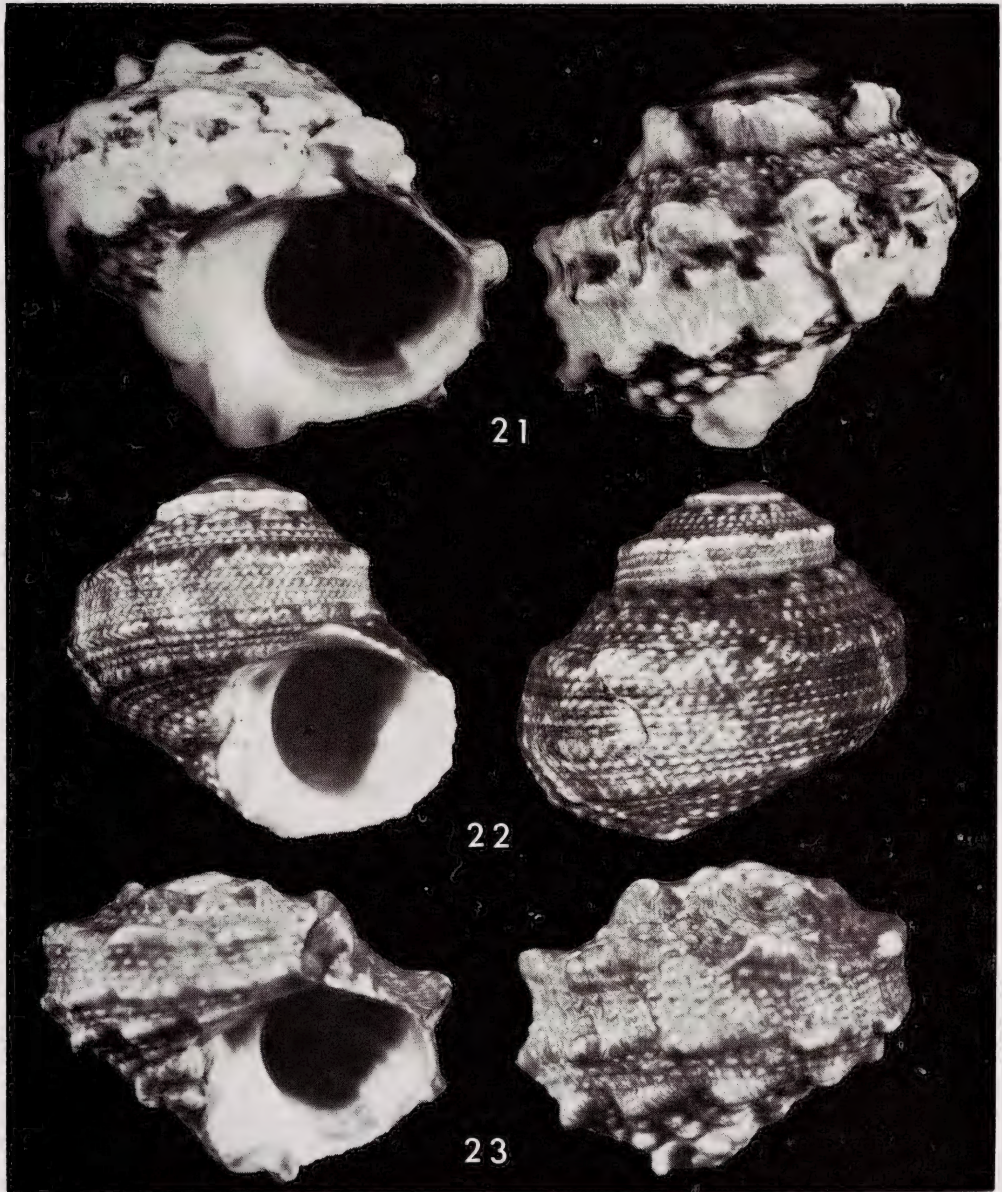
1781. "*Cochlea lunaris perforata*" Chemnitz, Syst. Conch. Cab., 5: 164, pl. 176, figs. 1744-46 (Nicobar Ids., and coasts of southern continents) [*non binom.*]
1791. *Turbo granulatus* Gmelin, Syst. Nat., ed. 13, p. 3601 (refers to Chemnitz, *op. cit.*, figs. 1744-45) [Indian and Southern Oceans].
1791. *Turbo granulatus* var. b Gmelin, Syst. Nat., ed. 13, p. 3601 (refers to Chemnitz, *op. cit.*, fig. 1746).
1798. *Lunella moniliformis* Röding, Mus. Bolten., p. 104 (refers to Chemnitz, *op. cit.*, fig. 1746).

Dimensions of holotype of *T. granulatus* (Chemnitz figs. 1744-45): 34.0 x 37.4 mm; syntype of *Lunella moniliformis* (Chemnitz fig. 1746): 15.0 x 19.7 mm (young specimen) (Fig. 23).

The species is very similar to *Turbo coronatus* Gmelin, except that *T. granulatus* has a perforate umbilicus. Kuroda & Habe (Kuroda, Habe & Oyama, 1971) consider the species conspecific with *T. coronatus* Gmelin. The specimen illustrated by Chemnitz (*op. cit.*) in fig. 1746, is a young individual of *T. granulatus*. The species lives in Sino-Japanese waters and the Indian Ocean.

Subninella undulata (Gmelin, 1791) (Fig. 24)

1786. *Turbo undulatus* Lightfoot, Portland Catalogue, p. 18.
1788. "*Turbo undulatus*" Chemnitz, Syst. Conch. Cab., 10: 296, pl. 169, figs. 1640-41 (New Zealand = error, and New Holland) [*non binom.*]



Figs. 21-23. 21. Holotype of *Turbo coronatus* Gmelin; length 41.0 mm. 22. Holotype of *T. granulatus* Gmelin; length 34.0 mm. 23. Syntype of *Lunella moniliformis* Röding; length 15.0 mm.

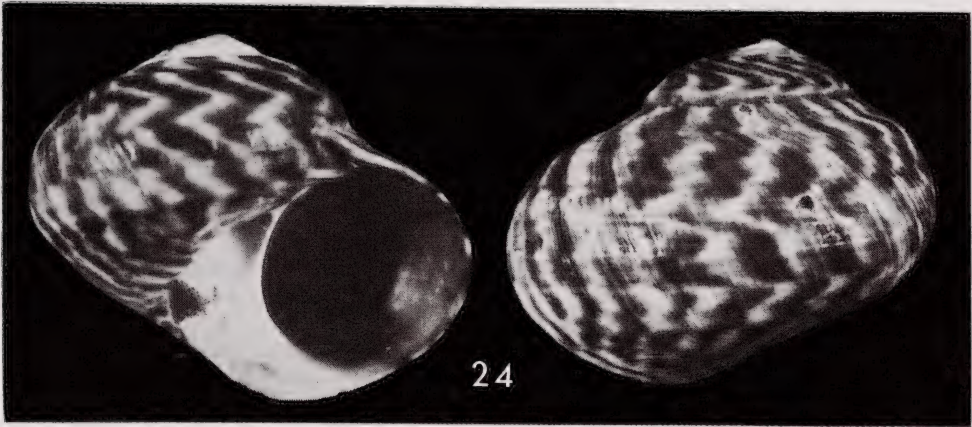


Fig. 24. Syntype of *Subninella undulata* (Gmelin); length 29.4 mm.

1791. *Turbo undulatus* Gmelin, Syst. Nat., ed. 13, p. 3597 (refers to Chemnitz, *op. cit.*, figs. 1640-41 and Martyn, 1784, Univ. Conch., pl. 1, fig. 29) [New Zealand = error, and New Holland].

Dimensions of syntype: 29.4 x 36.7 mm.

T. undulatus Gmelin, 1791, is a synonym of *T. undulatus* Lightfoot, 1786. The species lives in S.E. Australia but does not occur in New Zealand.

Family NERITIDAE

Nerita maxima Gmelin, 1791

(Fig. 25)

1781. "*Nerita maxima laevis*" Chemnitz, Syst. Conch. Cab., 5: 287, pl. 190, figs. 1942-43 (Hab:?) [*non binom.*]
1791. *Nerita maxima* Gmelin, Syst. Nat., ed. 13, p. 3683 (refers to Chemnitz, *op. cit.*, figs. 1942-43) [Hab:?].

Dimensions of holotype: 37.9 x 43.4 mm; shell smooth, with only 4-5 superficial spiral striae on shoulder, columella with 4 denticles; dark greenish-brown with cream stripes.

The species' range extends from the Philippine Islands westward into the Indian Ocean.

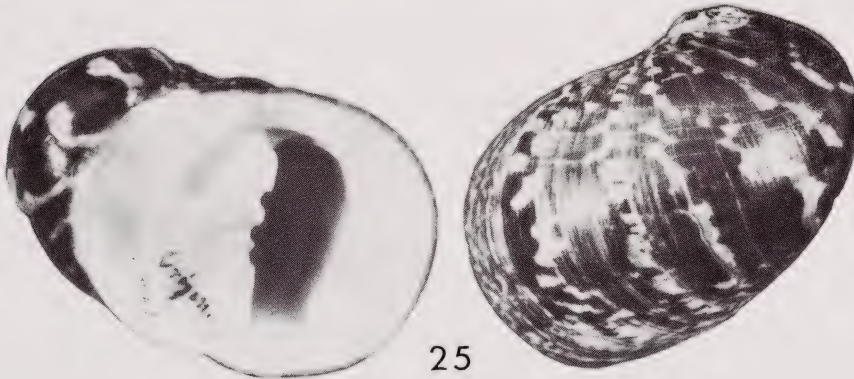
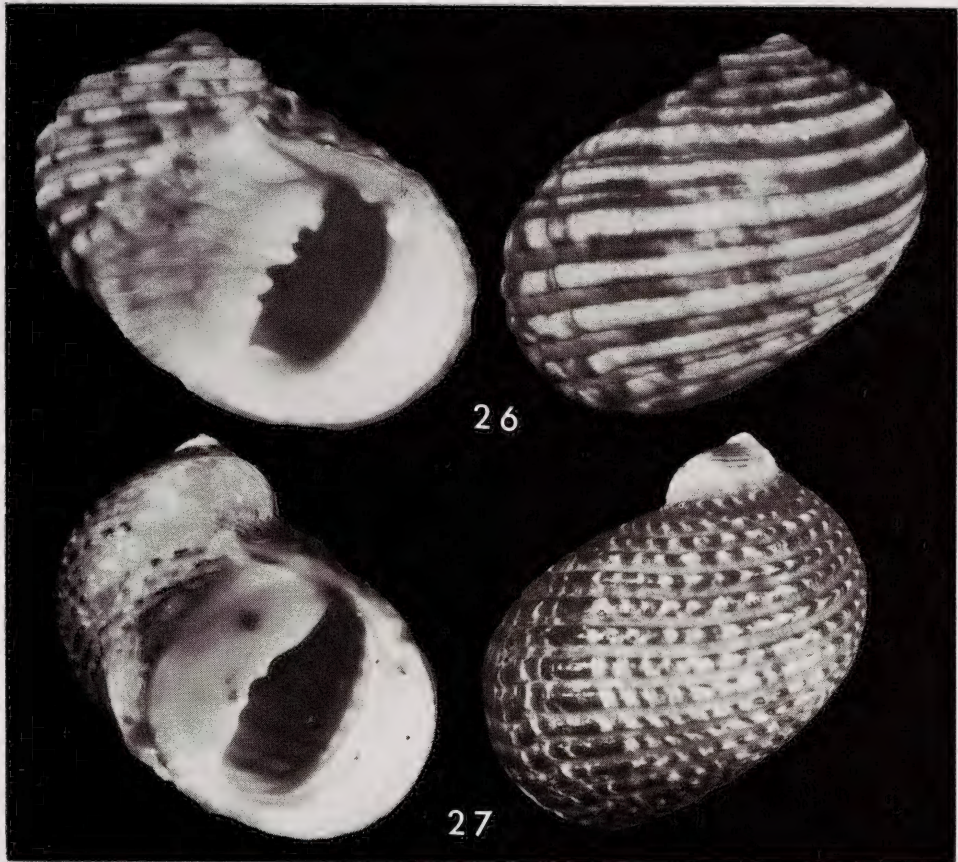


Fig. 25. Holotype of *Nerita maxima* Gmelin; length 37.9 mm.



Figs. 26, 27. 26. Syntype of *Nerita variegata* Röding; length 29.4 mm. 27. Holotype of *N. ascensionis* Gmelin; length 40.4 mm.

***Nerita variegata* Röding, 1798**

(Fig. 26)

1758. *Nerita grossa* Linnaeus, Syst. Nat., ed. 10, p. 779 (Asiatic Ocean).

1781. "*Nerita grossa* Linnaei" Chemnitz, Syst. Conch. Cab., 5: 299, pl. 191, figs. 1968-69 (Moluccas) [non binom.]

1798. *Nerita variegata* Röding, Mus. Bolten., p. 18 (refers to Geve and Chemnitz, *op. cit.*, figs. 1968-69).

Dimensions of syntype: 29.4 x 32.8 mm; shell with 12 spiral cords on the body whorl, 4 denticles + 1 intercalate one on the columella, and 2 large denticles + 15 smaller ones on the outer lip; the spiral cords have greenish-brown axial bands and the columella is stained with orange.

Nerita variegata Röding, 1798, is a synonym of the Indo-Pacific *N. grossa* Linnaeus, 1758.

***Nerita ascensionis* Gmelin, 1791**

(Fig. 27)

1781. "*Nerita in littore . . . ascensione*" Chemnitz, Syst. Conch. Cab., 5: 297, pl. 191, figs. 1956-57 (Ascension Id.) [non binom.]

1791. *Nerita ascensionis* Gmelin, Syst. Nat., ed. 13, p. 3683 (refers to Chemnitz, *op. cit.*, figs. 1956-57) [Ascension Id.].

Dimensions of probable holotype: 40.4 x 38.0 mm.

The dorsal side of the type-specimen has been depicted fairly well in Chemnitz (*op. cit.*), however, from a ventral view, the spire is far more elevated in the actual specimen than is shown in the figure. The species lives in the Atlantic Ocean, ranging from Brazil to Ascension Island.

Nerita bifasciata Gmelin, 1791 (Fig. 28)

1781. "*Nerita nigra*" Chemnitz, Syst. Conch. Cab., 5: 321, pl. 193, fig. 2015 (East Indies) [non binom.]
1791. *Nerita bifasciata* Gmelin, Syst. Nat., ed. 13, p. 3685 (refers to Rumphius and Chemnitz, *op. cit.*, fig. 1015 = error for 2015) [India].
1798. *Nerita arriaca* Röding, Mus. Bolten., p. 18 (refers to Chemnitz, *op. cit.*, fig. 2015).
1817. *Nerita nigra* Dillwyn, Desc. cat. Rec. shells, 2: 995 (refers to Chemnitz, *op. cit.*, fig. 2015) [published in synonymy of *N. polita* Linnaeus, 1758].
1850. *Nerita polita* var. *nigrobifasciata* Récluz, J. Conchyl., 1: 282 (refers to Chemnitz, *op. cit.*, fig. 2015) [Gambier Ids.].
1852. *Odontostoma nigra* Mörch, Cat. Conchyl. Yoldi, 1: 169 (refers to Chemnitz, *op. cit.*, fig. 2015).

Dimensions of syntype: 15.0 x 18.6 mm.

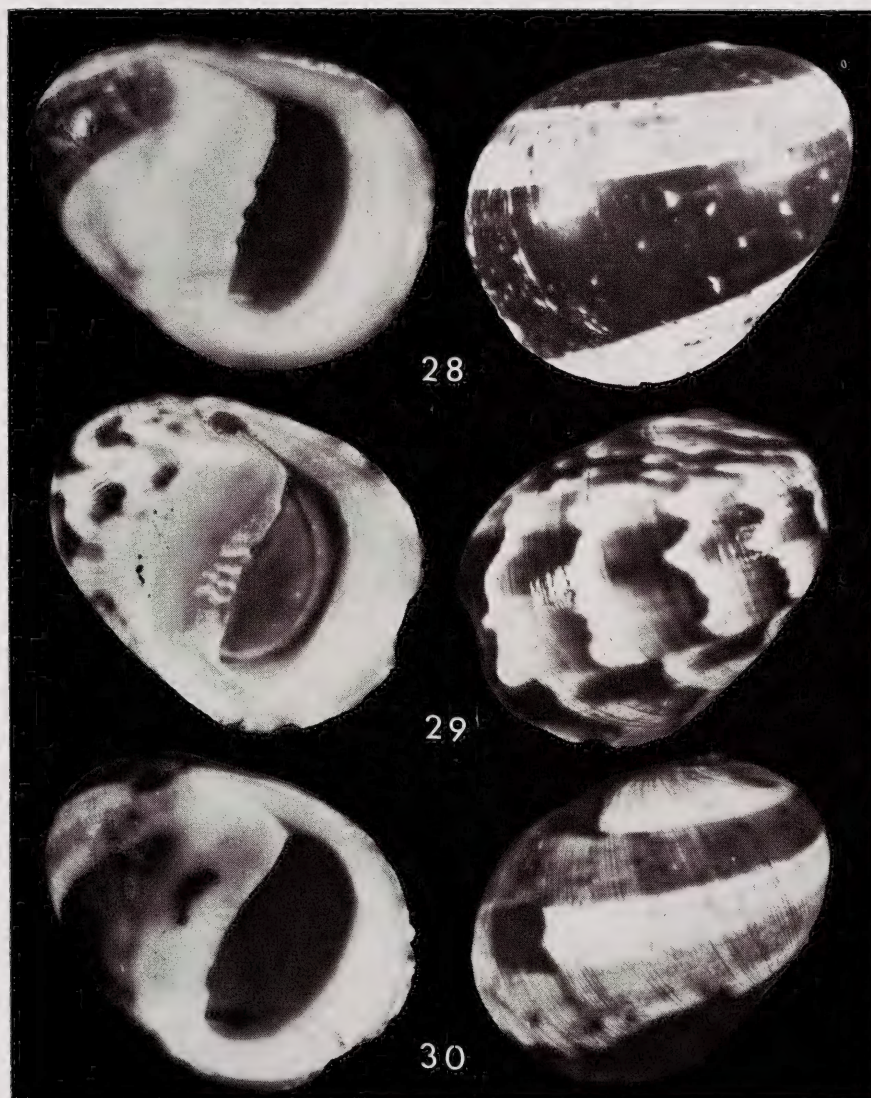
The type-specimen is a small and very worn *Nerita polita* Linnaeus, 1758.

Nerita litterata Gmelin, 1791 (Fig. 29)

1781. "*Nerita hieroglyphica*" Chemnitz, Syst. Conch. Cab., 5: 322, pl. 193, fig. 2016 (Hab:?) [non binom.]
1791. *Nerita litterata* Gmelin, Syst. Nat., ed. 13, p. 3685 (refers to Chemnitz, *op. cit.*, fig. 2016) [India].
1817. *Nerita hieroglyphica* Dillwyn, Desc. cat. Rec. shells, 2: 995 (refers to Chemnitz, *op. cit.*, fig. 2016) [East Indian Seas].
1850. *Nerita hieroglyphica* Récluz, J. Conchyl., 1: 282 (refers to Chemnitz, *op. cit.*, fig. 2016) [Fiji Ids.].
1852. *Odontostoma hieroglyphica* Mörch, Cat. Conchyl. Yoldi, 1: 168 (refers to Chemnitz, *op. cit.*, figs. 2016, 2018).

Dimensions of holotype: 15.7 x 17.0 mm; shell spirally and axially striate, columella with 4 small denticles, outer lip minutely dentate.

The type-specimen still contains the operculum. *Nerita litterata* Gmelin, 1791, is another synonym of the variable Indo-Pacific *N. polita* Linnaeus, 1758.



Figs. 28-30. 28. Syntype of *Nerita bifasciata* Gmelin; length 15.0 mm. 29. Holotype of *N. litterata* Gmelin; length 15.7 mm. 30. Syntype of *N. larva* Gmelin; length 16.5 mm.

***Nerita larva* Gmelin, 1791**

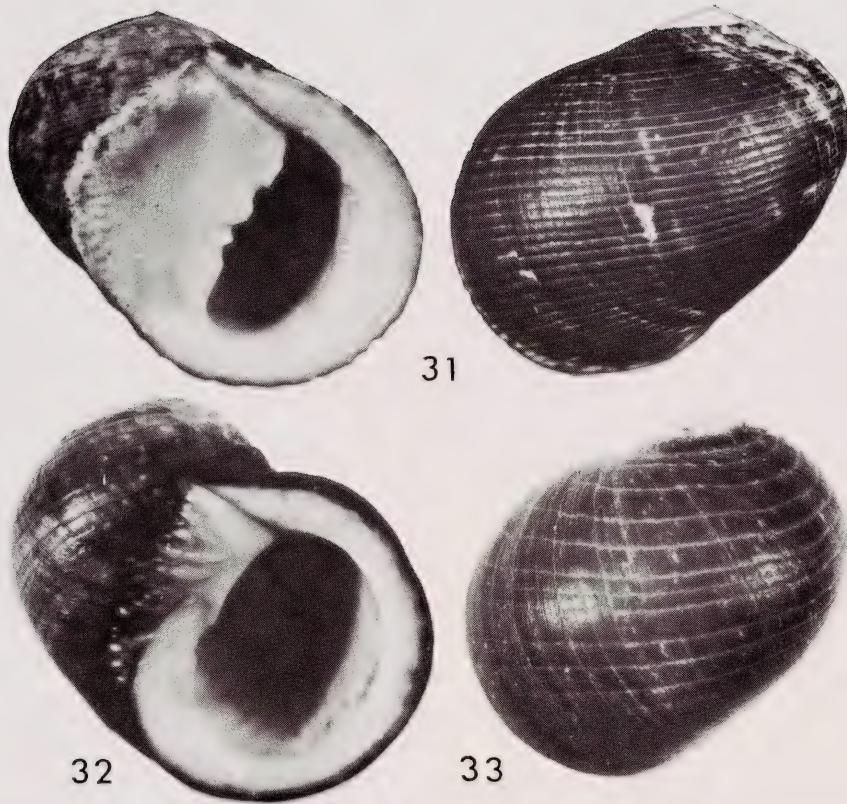
(Fig. 30)

1781. "*Nerita larva*" Chemnitz, Syst. Conch. Cab., 5: 323, pl. 193, fig. 2017 (Amboina) [non binom.]

1791. *Nerita larva* Gmelin, Syst. Nat., ed. 13, p. 3679 (refers to Rumphuis, pl. 22, fig. 6 and Chemnitz, *op. cit.*, fig. 2017) [Amboina].

Dimensions of syntype: 16.5 x 19.0 mm; shell axially finely striate, columella with 9 irregular small denticles.

The type-specimen is an immature individual of the Indo-Pacific *Nerita polita* Linnaeus, 1758.



Figs. 31-33. 31. Syntype of *Nerita nigrita* Röding; length 32.4 mm. 32, 33. Syntypes of *N. aterrima* Gmelin. 32. Length 27.5 mm. 33. Length 23.2 mm.

Nerita nigrita Röding, 1798

(Fig. 31)

1758. *Nerita histrio* Linnaeus, Syst. Nat., ed. 10, p. 778 (Hab:?)

1781. "*Nerita ex nigro*" Chemnitz, Syst. Conch. Cab., 5: 291, pl. 190, figs. 1948-49 and pl. 191, figs. 1960-61 (East Indies) [*non binom.*]

1798. *Nerita nigrita* Röding, Mus. Bolten., p. 19 (refers to Chemnitz, *op. cit.*, figs. 1960-61).

1850. *Nerita chemnitzii* Récluz, J. Conchyl., 1: 284 (refers to Chemnitz, *op. cit.*, figs. 1960-61) [Port du R. George].

Dimensions of syntype (Chemnitz figs. 1960-61): 32.4 x 35.4 mm; shell with 35 spiral cords on the body whorl, columella with 4 denticles and 3 weak plicae, outer lip with 22 small denticles.

The species appears to be conspecific with the Indian Ocean *Nerita histrio* Linnaeus, 1758.

Nerita aterrima Gmelin, 1791

(Figs. 32, 33)

1781. "*Nerita nigerrima*" Chemnitz, Syst. Conch. Cab., 5: 309, pl. 192, figs. 1985-86 (Hab:?) [*non binom.*]

1791. *Nerita aterrima* Gmelin, Syst. Nat., ed. 13, p. 3679 (refers to Chemnitz, *op. cit.*, figs. 1985-86) [Hab:?].
1817. *Nerita nigerrima* Dillwyn, Desc. cat. Rec. shells, 2: 996 (refers to Chemnitz, *op. cit.*, figs. 1985-86) [Hab:?].

Dimensions of 2 probable syntypes: 27.5 x 27.0 mm and 23.2 x 24.2 mm; shell with *c.* 16 spiral grooves on the body whorl, narrow columellar callus slightly plicate and with 1 denticle and 2 small, feeble nodules, aperture wide, outer lip with 2 larger and 3-4 smaller denticles.

We have been unable to elucidate the identity of this species. Mörch (1852) cited "Antilles" as the locality for *N. aterrima*, but he probably confused the species with *N. fulgurans* Gmelin, 1791. Reeve (1855) and all subsequent authors, illustrate a completely different species for the "*N. nigerrima*" of Chemnitz. On the label accompanying the type-specimen, someone added the locality "Coasts of Guinea". It is probable that *N. aterrima* is only an unusual variant of *N. senegalensis* Gmelin, 1791.

Nerita undulata Gmelin, 1791 (Fig. 34)

1758. *Nerita chamaeleon* Linnaeus, Syst. Nat., ed. 10, p. 779 (Banda Id. = Moluccas, Inaonesia).
1781. "*Nerita undata subtilior*" Chemnitz, Syst. Conch. Cab., 5: 301, pl. 191, figs. 1970-71 (East Indies) [*non binom.*]
1791. *Nerita undulata* Gmelin, Syst. Nat., ed. 13, p. 3678 (refers to Chemnitz, *op. cit.*, figs. 1970-71) [India].

Dimensions of holotype: 21.7 x 24.0 mm; shell with *c.* 30 spiral threads on the body whorl, 7 weak plicae on the columella, denticles only indicated by a swelling, outer lip with 15 small denticles; light green in colour, with blackish-brown zones.

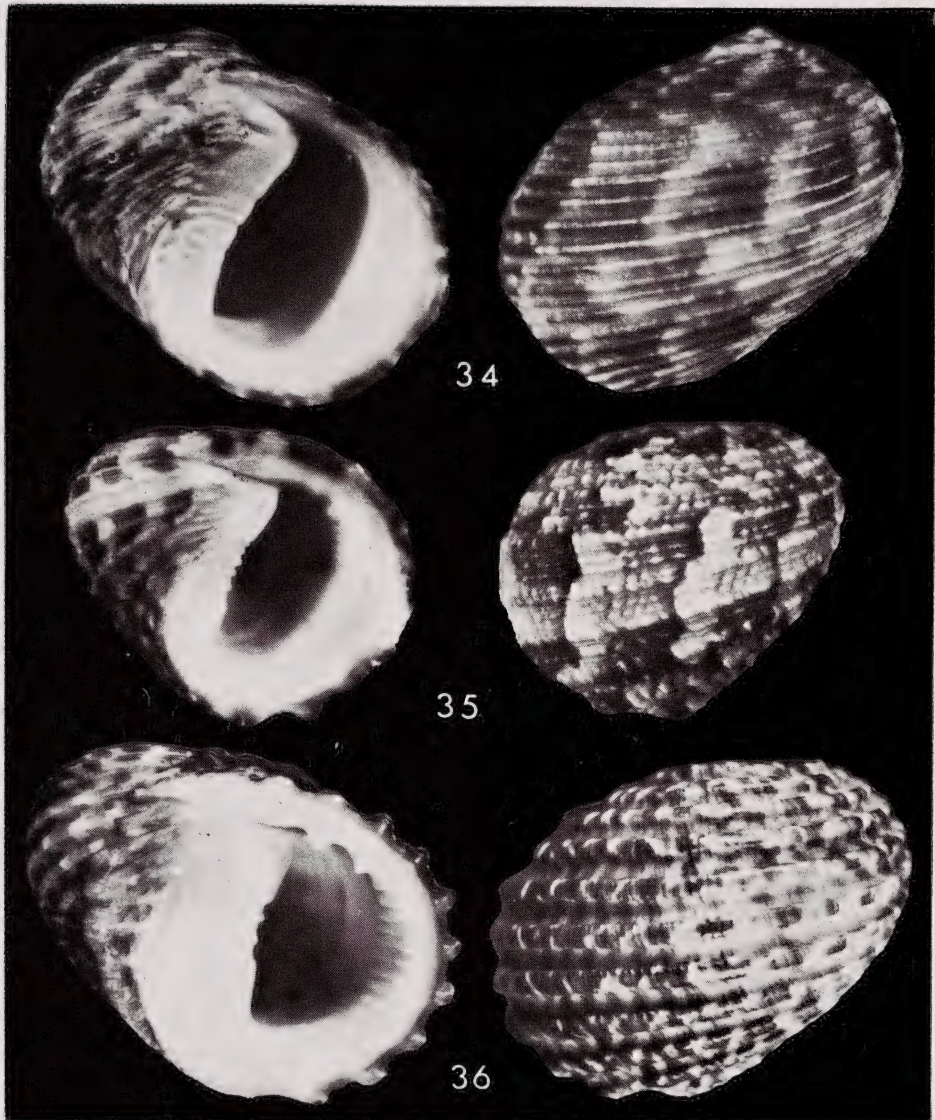
N. undulata Gmelin, 1791, is a synonym of the Indo-Pacific species *N. chamaeleon* Linnaeus, 1758.

Nerita stella Dillwyn, 1817 (Fig. 35)

1795. "*Nerita stella*" Chemnitz, Syst. Conch. Cab., 11: 174, pl. 197, figs. 1907-08 (East Indies) [*non binom.*]
1817. *Nerita stella* Dillwyn, Desc. cat. Rec. shells, 2: 1004 (refers to Chemnitz, *op. cit.*, figs. 1907-08) [East Indian Seas].

Dimensions of syntype (ex-Spengler coll.): 16.5 x 18.7 mm; shell with a depressed spire, 27 strong or weak spiral cords on the body whorl, 5 small denticles on the columella, a wrinkled callus and a finely dentate outer lip.

Chemnitz (*op. cit.*) based his description of the species on a specimen from the Danish Natural History Society and another from the Spengler collection. The extant Spengler specimen is a variant of *N. chamaeleon* Linnaeus, 1758, with a depressed spire and coarser, more granulose sculpture, and has subsequently been described as *N. squamulata* Le Guillou, 1841. *N. stella* Dillwyn, is similar to *N. planospira* Anton, 1839 (synonym *N. atropurpurea* Récluz, 1841), but the latter species is easily distinguished by the presence of an elongated, purple-black blotch adjacent to the columella



Figs. 34-36. 34. Holotype of *Nerita undulata* Gmelin; length 21.7 mm. 35. Syntype of *N. stella* Dillwyn; length 16.5 mm. 36. *N. exuvia* Linnaeus (specimen from Chemnitz, figs. 1972-73); length 22.0 mm.

and the unusual twist of the outer lip over the spire. *N. exuvia* Linnaeus, 1758, has similar apertural features, but this species has elevated, thick and broad spiral cords with deep and concave interspaces. A specimen of *N. exuvia* illustrated by Chemnitz (Martini & Chemnitz 1781, vol. 5, figs. 1972-73) is shown for comparison (Fig. 36).

Nerita pica Gmelin, 1791

(Fig. 37)

1781. "*Pica in familia neritarium imperforatum*" Chemnitz, Syst. Conch. Cab., 5: 298, pl. 191, figs. 1964-65 (Hab:?) [*non binom.*]

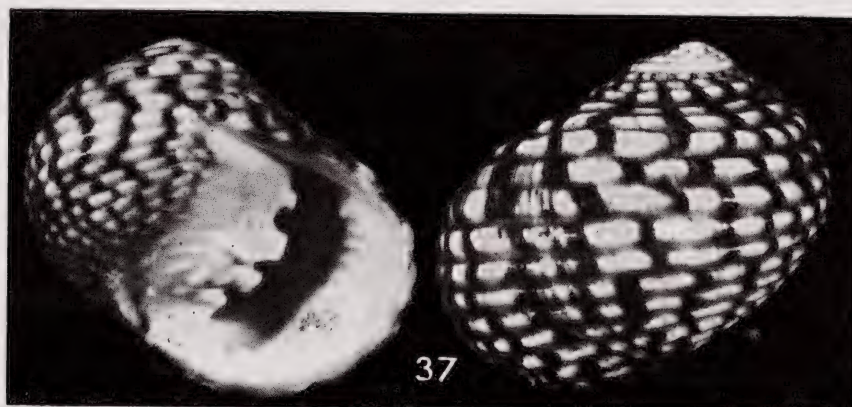


Fig. 37. Syntype of *Nerita pica* Gmelin; length 24.5 mm.

1791. *Nerita pica* Gmelin, Syst. Nat., ed. 13, p. 3684 (refers to Rumphius, pl.22, fig. 4 and Chemnitz, *op. cit.*, figs. 1964-65) [Indian Ocean = error].
1791. *Nerita versicolor* Gmelin, Syst. Nat., ed. 13, p. 3684 (Antilles).
1798. *Nerita tessellata* (Röding, Mus. Bolten., p. 19 (refers to Chemnitz, *op. cit.*, figs. 1964-65) [non Gmelin, 1791].

Dimensions of syntype: 24.5 x 25.7 mm; shell white, maculated with black, sculptured with 17 strong, black-spotted cords on body whorl, columella with 4 denticles, outer lip with 13.

Chemnitz (*op. cit.*) was ignorant of the species locality, but Gmelin (1791) suggested the Indian Ocean. The locality indication is incorrect, and *N. pica* Gmelin is a synonym of the Caribbean *N. versicolor* Gmelin, 1791.

Family NATICIDAE

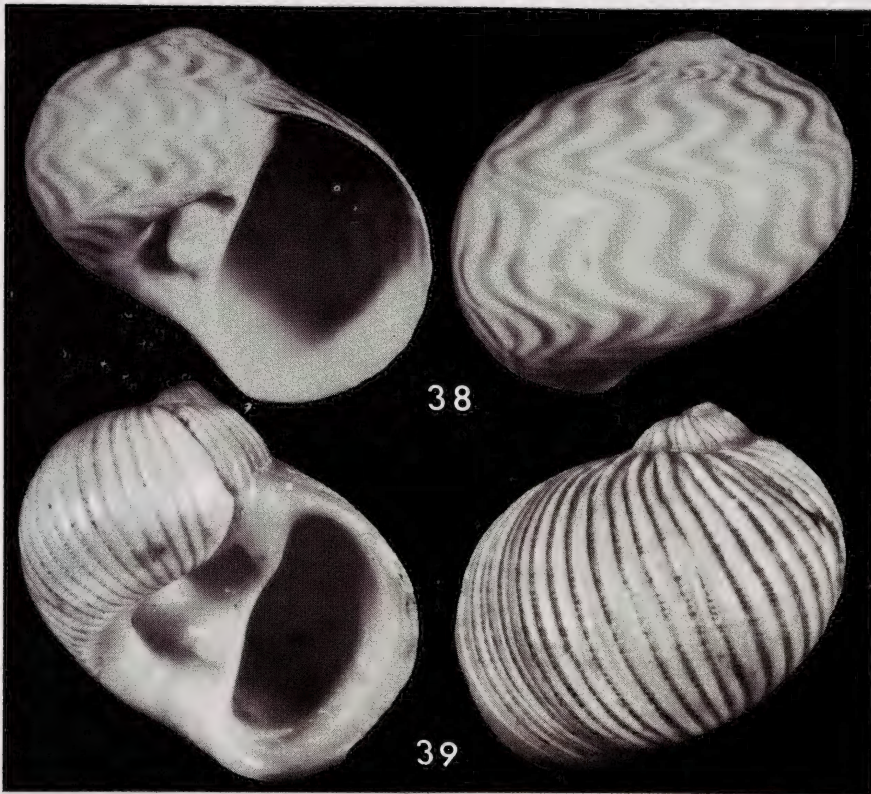
Natica undulata (Röding, 1798)

(Fig. 38)

1781. "*Zebra in familia neritarum*" Chemnitz, Syst. Conch. Cab., 5: 263, pl. 187, figs 1885-86 (Moluccas) [non binom.]
1798. *Cochlis undulata* Röding, Mus. Bolten., p. 147 (refers to Chemnitz, *op. cit.*, figs. 1885-86).
1817. *Nerita zebra* Dillwyn, Desc. cat. Rec. shells, 2: 977 (refers to Chemnitz, *op. cit.*, figs. 1885-86 [published in synonymy of *Nerita canrena* Linnaeus, var. I].
1822. *Natica zebra* Lamarek, Hist. nat. anim. s. vert., 6: 203.

Dimensions of syntype: 20.8 x 23.6 mm; shell only weakly striated at sutures, cream in colour, with wavy orange-brown flames, protoconch purple.

The species lives in the tropical West Pacific and the Indian Ocean. *Natica zebra* Lamarek, 1822, is a synonym.



Figs. 38, 39. 38. Syntype of *Natica undulata* (Röding); length 20.8 mm. 39. Holotype of *N. rugosa* (Gmelin); length 20.8 mm.

Natica rugosa (Gmelin, 1791)

(Fig. 39)

1778. *Nerita sulcata* Born, Ind. rer. nat. mus. Caes. Vindob., p. 416, 1780 Born, Test. Mus. Caes. Vindob., p. 400, pl. 17, figs. 5, 6 (Hab:?).
1781. "*Nerita rugosa*" Chemnitz, Syst. Conch. Cab., 5: 269, pl. 188, figs. 1902-03 (West Indies) [*non binom.*]
1791. *Nerita rugosa* Gmelin, Syst. Nat., ed. 13, p. 3673 (refers to Chemnitz, *op. cit.*, figs. 1902-03) [American Islands].
1798. *Cochlis plicata* Röding, Mus. Bolten., p. 147 (refers to Chemnitz, *op. cit.*, figs. 1902-03).

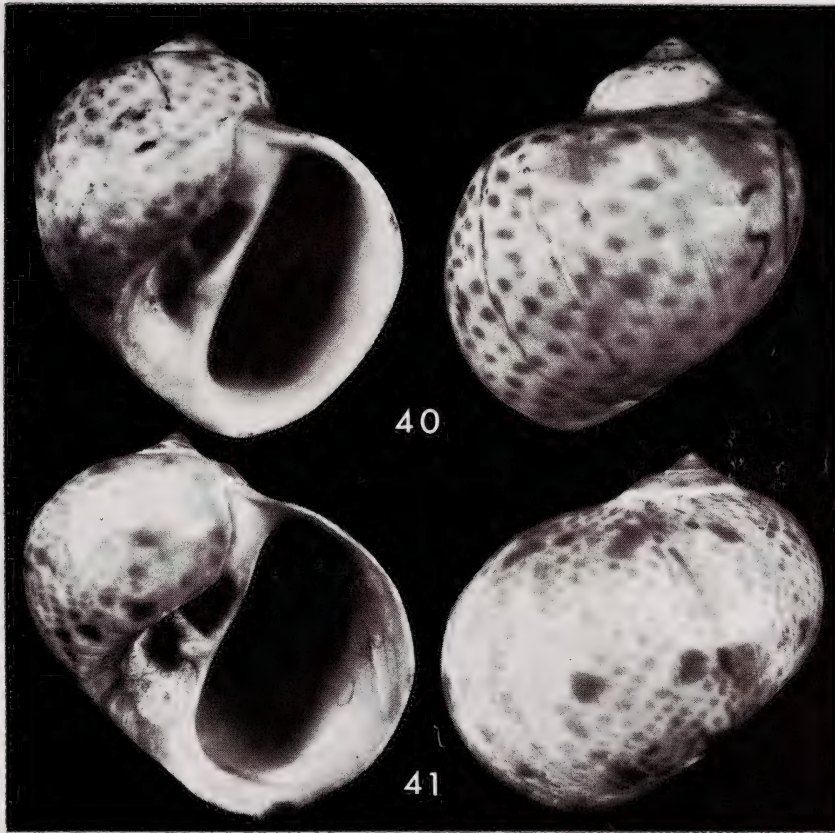
Dimensions of holotype: 20.8 x 20.9 mm; shell with 37 axial ribs on the body whorl and pitted interspaces.

Nerita rugosa Gmelin, 1791, is a synonym of *Natica sulcata* (Born, 1778), from the West Indies.

Natica stercusmuscarum (Röding, 1798)

(Figs. 40, 41)

1781. "*Nerita multoties punctata*" Chemnitz, Syst. Conch. Cab., 5: 261, pl. 187, figs. 1878-80 (East Indies = error) [*non binom.*]
1791. *Nerita cruentata* Gmelin, Syst. Nat., ed. 13, p. 3673 (refers to Chemnitz, vol. 5, pl. 188, figs. 1900-01) [Hab:?].

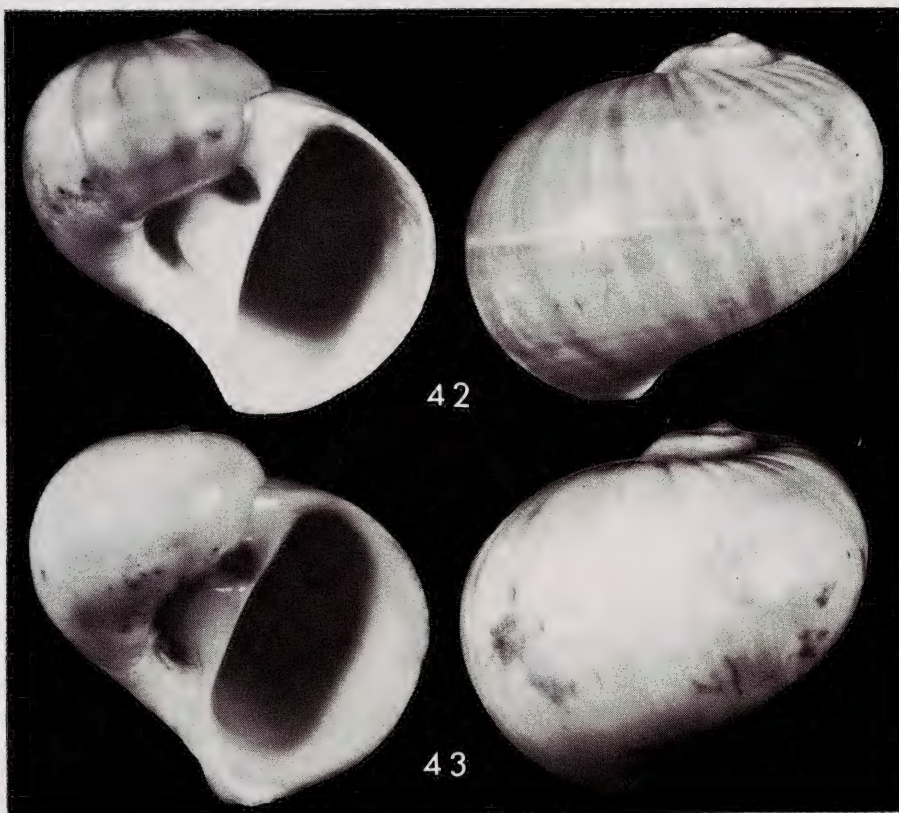


Figs. 40, 41. Syntypes of *Natica stercusmuscarum* (Röding). 40. Specimen illustrated by Chemnitz, figs. 1878-79; length 23.7 mm. 41. Specimen illustrated by Chemnitz, fig. 1880; length 22.2 mm.

1798. *Cochlis stercusmuscarum* Röding, Mus. Bolten., p. 147 (refers to Chemnitz, *op. cit.*, figs. 1878-80) [non *Nerita stercusmuscarum* Gmelin, 1791 = *Natica*].
1829. *Natica adpersa* Menke, Verz. Conchyl.-Samml. Malsburg, p. 13; 1830 Menke, Synop. meth. Mollusc., p. 46 (refers to Chemnitz, *op. cit.*, figs. 1676-1680 = error for figs. 1876-80).
1838. *Natica maculata* Deshayes in Deshayes & Edwards, Hist. nat. anim. s. vert., ed. 2, 8: 645 (refers to Chemnitz, *op. cit.*, figs. 1878-80, Gualtieri and Schröter) [Mediterranean] (non *Natica maculata* Perry, 1811).
1852. *Natica (Cochlis) multoties punctata* Mörch, Cat. Conchyl. Yoldi, 1: 134 (refers to Chemnitz, *op. cit.*, figs. 1878-80).

Dimensions of syntype (Chemnitz figs. 1878-79): 23.7 x 22.2 mm; shell with a row of large brown spots near suture; syntype (Chemnitz fig. 1880): 22.2 x 23.2 mm; shell with 3 rows of large brown spots on the body whorl.

The species lives in the Mediterranean and is a synonym of *Natica cruentata* (Gmelin, 1791).



Figs. 42, 43. 42. Holotype of *Natica orientalis* (Gmelin); length 27.0 mm. 43. Syntype of *N. explanata* (Röding); length 28.4 mm.

Natica orientalis (Gmelin, 1791) (Fig. 42)

1781. "*Nerita subfulva*" Chemnitz, Syst. Conch. Cab., 5: 268, pl. 188, figs. 1898-99 (Oriental Seas) [non binom.]
1791. *Nerita orientalis* Gmelin, Syst. Nat., ed. 13, p. 3673 (refers to Chemnitz, *op. cit.*, figs. 1898-99) [Oriental Seas].
1798. *Albula vitellus* Röding, Mus. Bolten., p. 20 (refers to Chemnitz, *op. cit.*, figs. 1898-99) [non *Nerita vitellus* Linnaeus, 1758 = *Natica*].
1817. *Nerita subfulva* Dillwyn, Desc. cat. Rec. shells, 2: 982 (refers to Chemnitz, *op. cit.*, figs. 1898-99) [published in synonymy of *N. orientalis* Gmelin, 1791].

Dimensions of holotype: 27.0 x 29.0 mm; shell smooth and only weakly crenulate near sutures.

The species lives in the Indian Ocean.

Natica explanata (Röding, 1798) (Fig. 43)

1781. "*Nerita eburnea candidissima*" Chemnitz, Syst. Conch. Cab., 5: 268, pl. 188, fig. 1904 (Oriental Seas) [non binom.]
1791. "*Nerita orientalis*" var. b Gmelin, Syst. Nat., ed. 13, p. 3673 (refers to Chemnitz, *op. cit.*, fig. 1904 (Oriental Seas)).

1798. *Cochlis explanata* Röding, Mus. Bolten., p. 146 (refers to Chemnitz, *op. cit.*, fig. 1904).
1817. *Nerita eburnea* Dillwyn, Des. cat. Rec. shells, 2: 982 (refers to Chemnitz, *op. cit.*, fig. 1904) [published in synonymy of *Nerita orientalis* var. b Gmelin, 1791].
1838. *Natica eburnea* Deshayes & Edwards, Hist. nat. anim. s. vert., ed. 2, 8: 646 (refers to Chemnitz, *op. cit.*, fig. 1904 and Geve, pl. 28, fig. 308) [non Cristofori & Jan, 1832].

Dimensions of syntype: 28.4 x 30.0 mm.

The type-specimen is an albinotic individual of *Natica orientalis* (Gmelin, 1791). There are still traces of brown on the shell and within the aperture.

Polinices tumidus (Swainson, 1840)

(Fig. 44)

- *Polinices mamilla* auct. (non *Nerita mamilla* Linnaeus, 1758).
1781. "*Mamma albula*" Chemnitz, Syst. Conch. Cab., 5: 280, pl. 189, figs. 1928-31 (East Indies and Tranquebar) [non binom.]
1798. *Albula mammilla* Röding, Mus. Bolten., p. 20 (refers to Chemnitz, *op. cit.*, figs. 1928-31) [non *Nerita mamilla* Linnaeus, 1758].
1840. *Mamillaria tumida* Swainson, Treat. Malac., p. 345 (refers to Chemnitz, *op. cit.*, figs. 1928-31).

Only the syntype illustrated by Chemnitz (*op. cit.*) in figures 1928-29 remains in the Spengler collection. This syntype is the common Indo-Pacific "*Polinices mamilla*" of authors (not of Linnaeus, 1758), and *Natica pyriformis* Récluz, 1844. In order to stabilise nomenclature, the remaining syntype, dimensions 43.2 x 33.3 mm, is here designated as the lectotype of *Mamillaria tumida* Swainson, 1840. For further discussions on this species and *Polinices mamilla* (Linnaeus), see Cernohorsky (1971).



Fig. 44. Lectotype of *Polinices tumidus* (Swainson); length 43.2 mm.



Fig. 45. Syntype of *Cymatium tripus* (Lamarck); length 75.4 mm.

Family CYMATIIDAE

Cymatium tripus (Lamarck, 1822)

(Fig. 45)

1795. "*Murex tripus*" Chemnitz, Syst. Conch. Cab., 11: 128, pl. 193, figs. 1858-59 (Tutucoryn, near Cabo Comorin, Coromandel) [*non binom.*]
1817. *Murex tripus* Dillwyn, Desc. cat. Rec. shells, 2: 697 (refers to Chemnitz, *op. cit.*, figs. 1858-59 with a query) [published in synonymy of *M. femorale* Linnaeus, var.].
1822. *Triton tripus* Lamarck, Hist. nat. anim. s. vert., 7: 184 (refers to Chemnitz, *op. cit.*, figs. 1858-59).

Dimensions of 2 syntypes: 75.4 x 37.3 mm and 7.3 x 34.3 mm.

Lamarck owned his own specimens of *Triton tripus*, and the Chemnitz specimen would qualify for type selection only if Lamarck's types could no longer be found.

Family MURICIDAE

Pterynotus alatus (Röding, 1798)

(Fig. 46)

1777. "*Purpura subulata triquetra*" Martini, Syst. Conch. Cab., 3: 350, pl. 111, figs. 1036-37 (near Tranquebar, coast of Coromandel) [*non binom.*]
1798. *Purpura alata* Röding, Mus. Bolten., p. 144 (refers to Martini, *op. cit.*, figs. 1036-37).
1839. *Murex acanthopterus* Anton, Verz. Conchyl., p. 81 (refers to Martini, *op. cit.*, figs. 1036-37) [non Lamarck, 1816].

1840. *Murex martinianus* (Pfeiffer, Krit. Reg. Mart. & Chemn. syst. Konchyl. Kab., p. vii refers to Martini, *op. cit.*, figs. 1036-37).

Dimensions of syntype: 56.0 x 23.0 mm; (type-specimen ex-Spengler coll.).

Purpura alata Röding, 1798, is an earlier name for *Murex pinnatus* Swainson, 1822. The species range extends westward from the Philippine Islands.



Fig. 46. Syntype of *Pterynotus alatus* (Röding); length 56.0 mm.

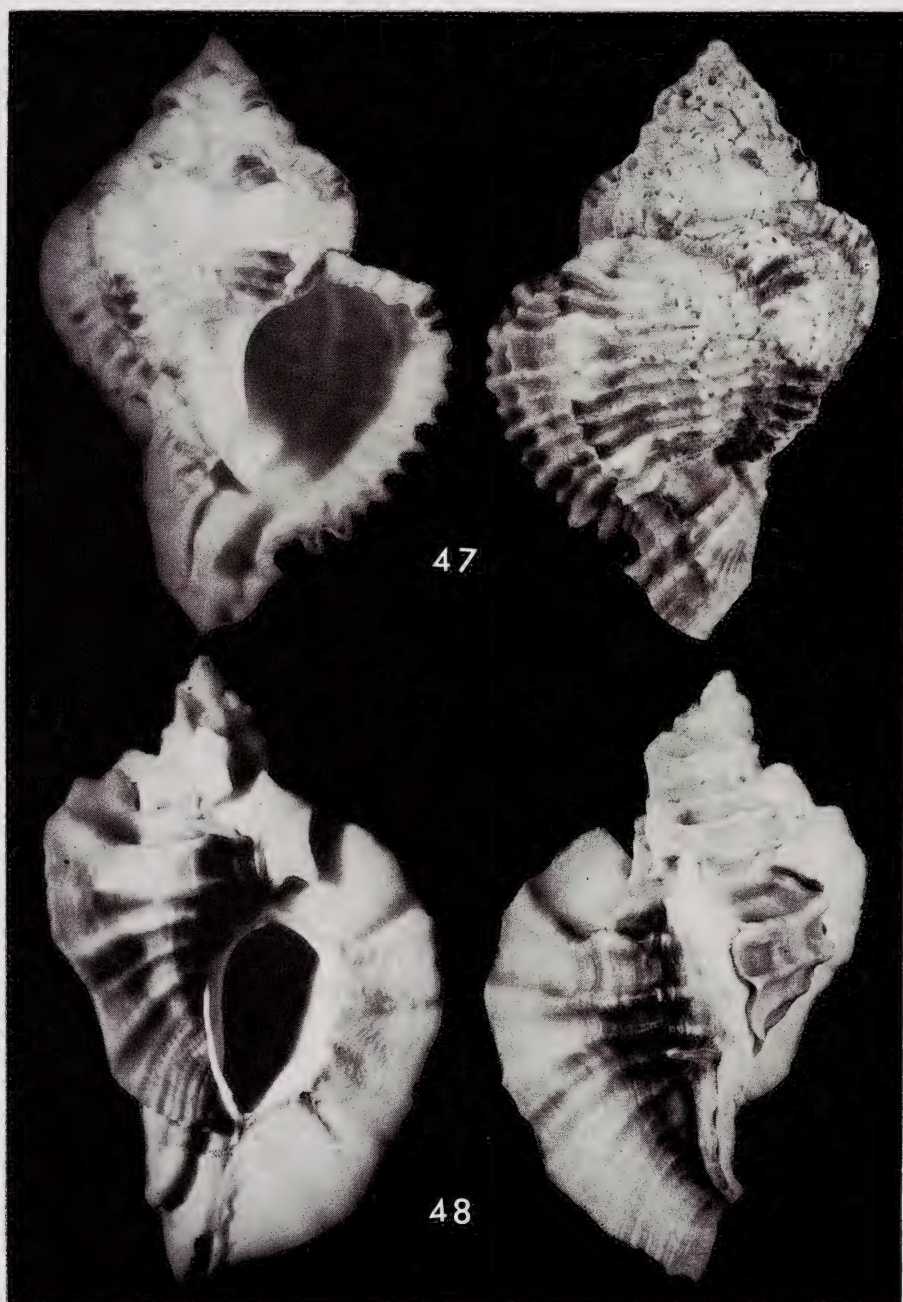
Hexaplex rosarium (Röding, 1798)

(Fig. 47)

1788. "*Murex rosarium*" Chemnitz, Syst. Conch. Cab., 10: 245, pl. 161, figs. 1528-29 (*non binom.*)
1798. *Purpura rosarium* Röding, Mus. Bolten., p. 140 (refers to Chemnitz, *op. cit.*, figs. 1528-29).
1816. *Purpura imperialis* Schumacher, Essai nouv. syst., p. 213 (refers to Chemnitz, *op. cit.*, figs. 1528-29 and Favanne, pl. 37, fig. 13).
1817. *Murex rosarium* Dillwyn, Desc. cat. Rec. shells, 2: 685 (refers to Chemnitz, *op. cit.*, figs. 1528-29).

Dimensions of syntype: 64.0 x 40.8 mm; immature specimen with 6 varices on each whorl.

The species lives in West Africa. Knudsen (1956) gives a detailed synonymy and includes *Purpura rosarium* Röding, 1798, in the synonymy of *Murex saxatilis* Linnaeus, 1758 (= *M. saxatilis* of authors — non Linnaeus). Vokes (1971), however, considers *Murex saxatilis* of authors (= *Purpura duplex* Röding, 1798) to be distinct from *P. rosarium*. The two syntypes of *Murex melonulus* Lamarck, 1822, in the Muséum d'Histoire Naturelle, Geneva, No. 1099/51, are the same species as *Purpura rosarium* Röding.



Figs. 47, 48. 47. Syntype of *Hexaplex rosarium* (Röding); length 64.0 mm. 48. Syntype of *Ceratostoma foliatum* (Gmelin); length 58.7 mm.

Ceratostoma foliatum (Gmelin, 1791)

(Fig. 48)

1784. "*Purpura foliata*" Martyn, Univ. Conch., 2: pl. 66, 2 figs. (N.W. coast of America) [*non binom.*]
1788. "*Murex purpura alata*" Chemnitz, Syst. Conch. Cab., 10: 250, pl. 161, figs. 1538-39 (N.W. coast of America and King George Sound = last locality an error) [*non binom.*]
1791. *Murex foliatus* Gmelin, Syst. Nat., ed. 13, p. 3529 (refers to Martyn, *op. cit.*, pl. 66, and Chemnitz, *op. cit.*, fig. 153 = error for 1538).
1817. *Purpura alata* Schumacher, Essai nouv. syst., p. 213 (refers to Chemnitz, *op. cit.*, figs. 1538-39 [*non Röding*, 1798]).
1822. *Murex tripterus* Lamarck, Hist. nat. anim. s. vert., 7: 165; 1842 Kiener, Spéc. gén. icon. coq. viv., 7: 108, pl. 26, fig. 2 (*non* Born, 1778; *nec* Lamarck, 1803 and 1816).

Dimensions of syntype: 58.7 x 35.0 mm.

The species lives in N.W. America, and Chemnitz's second locality indication of King George Sound [= outer harbour of Albany, S.W. Australia] is an error. *Murex tripterus* Lamarck, 1803 and 1816, is a fossil from Grignon, Eocene of France, which which has been re-named *M. tripteroïdes* Lamarck, 1822. Lamarck's 2 syntypes of *M. tripterus* of 1822, are in the Muséum d'Histoire Naturelle, Geneva, No. 1099/29, and are the same species as *M. foliatus* Gmelin, 1791.

Thais sacellum (Gmelin, 1791)

(Fig. 49)

1788. "*Murex sacellum*" Chemnitz, Syst. Conch. Cab., 10: 267, pl. 163, figs. 1561-62 (Nicobar Ids.) [*non binom.*]
1791. *Murex sacellum* Gmelin, Syst. Nat., ed. 13, p. 3530 (refers to Chemnitz, *op. cit.*, figs. 1561-62) [Nicobar Ids., Indian Ocean].
1798. *Drupa muricina* Röding, Mus. Bolten., p. 56 (refers to Chemnitz, *op. cit.*, figs. 1561-62).

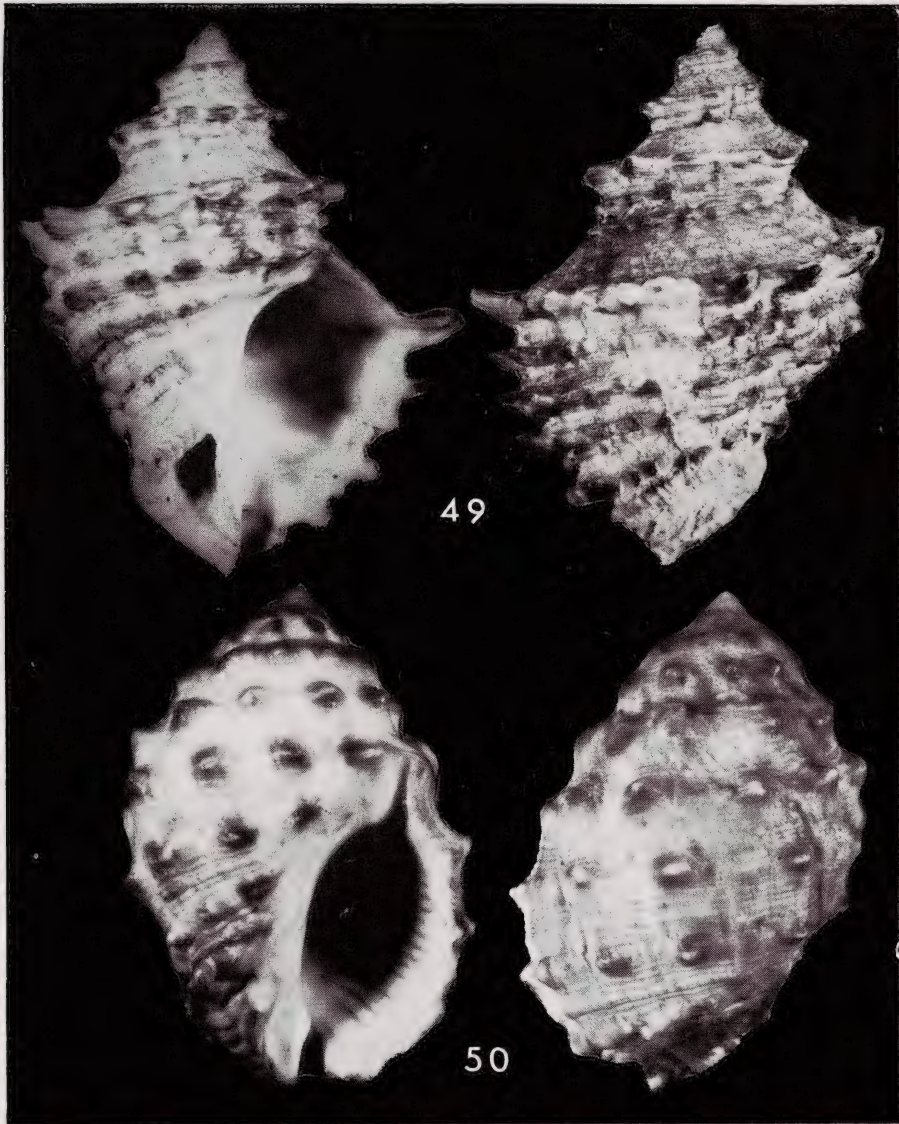
Dimensions of holotype: 44.6 x 34.6 mm; shell immature, spirally corded and with a single row of prominent spines on the spire whorls and 5 spinose cords on the body whorl.

The species has been mistaken during the last century for *Murex rugosus* Born, 1778, a small moruline species which is probably referable to *Drupella* Thiele. Deshayes & Edwards (1843) remarked on the confusion surrounding *Murex sacellum*, but erroneously assigned the species to *Pyruca*. Kaicher (1957) illustrates *Thais sacellum* under the name *T. rugosa* (Born), and reports its occurrence in India, Ceylon and Malaya.

Mancinella pyrum (Dillwyn, 1817)

(Fig. 50)

1795. "*Murex pyrum nodosum silvestre*" Chemnitz, Syst. Conch. Cab., 11: 122, pl. 192, figs. 1847-48 (South Seas) [*non binom.*]
1798. *Volema alouina* Röding, Mus. Bolten., p. 58 (refers to Martini, vol. 3, pl. 101, figs. 967-68).
1798. *Volema glacialis* Röding, Mus. Bolten., p. 58 (same reference as for *V. alouina* Röding, 1798).

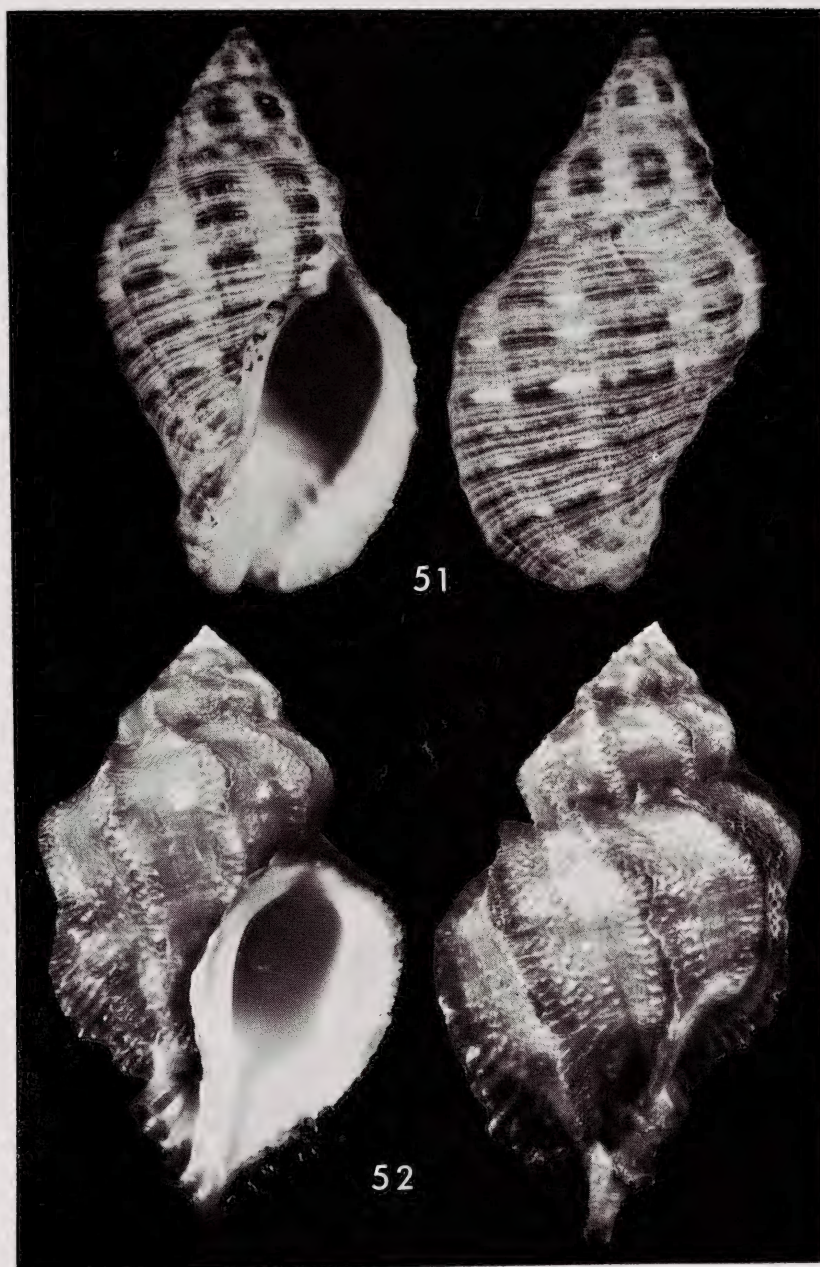


Figs. 49, 50. 49. Holotype of *Thais sacellum* (Gmelin); length 44.6 mm. 50. Syntype of *Mancinella pyrum* (Dillwyn); length 44.0 mm.

1817. *Murex pyrum* Dillwyn, Desc. cat. rec. shells, 2:707 (refers to Chemnitz, *op. cit.*, figs. 1847-48) [non Linnaeus, 1758].

Dimensions of syntype: 44.0 x 31.0 mm.

Murex pyrum Dillwyn, 1817, is a primary homonym of *M. pyrum* Linnaeus, 1758, and a synonym of *Mancinella alouina* (Röding, 1798) [= *M. mancinella* of authors]. The species has an Indo-Pacific distribution.



Figs. 51, 52. Syntype of *Purpura strigosa* (Gmelin); length 41.4 mm. 52. Syntype of *Vitularia miliaris* (Gmelin); length 55.0 mm.

Purpura strigosa (Gmelin, 1791)

(Fig. 51)

1780. "*Buccinum flammeum*" Chemnitz, Syst. Conch. Cab., 4: 62, vignette 38a, b on p. 49 (Hab:?) [*non binom.*]

1791. *Buccinum strigosum* Gmelin, Syst. Nat., ed. 13, p. 3494 (refers to Buonanni, Mus. Kirch., 3, fig. 38 and Chemnitz, *op. cit.*, vig. 38a, b) (Hab:?) [*non B. strigosum* Gmelin, 1791, p. 3476; *nec* p. 3488].
- 1839 *Murex strigosus* Anton, Verz. Conchyl., p. 82 (refers to Chemnitz, *op. cit.*, vig. 38).
1844. *Purpura buccinea* Deshayes in Deshayes & Edwards, Hist. nat. anim. s. vert., ed. 2, 10: 92 (New Guinea).
1852. *Purpura (Stramonita) flammea* Mörch, Cat. Conchyl. Yoldi, 1: 90 (refers to Chemnitz, *op. cit.*, vig. 38).

Dimensions of syntype: 41.4 x 21.5 x 26.3 mm; shell slightly immature, sculptured with axial ribs and nodulose spiral cords, anterior of columella protruding into aperture and forming a blunt tooth, adjacent area of columella with 5 small plications, aperture striate.

Purpura buccinea Deshayes, 1844, will have to replace the homonymous *Buccinum strigosum* Gmelin, 1791 (p. 3494). The species lives in the S.W. Pacific and the most frequently cited locality is New Guinea.

Vitularia miliaris (Gmelin, 1791)

(Fig. 52)

1788. "*Murex purpura scabra*" Chemnitz, Syst. Conch. Cab., 10: 246, pl. 161, figs. 1532-35 (Nicobar Ids.) [*non binom.*]
1791. *Murex miliaris* Gmelin, Syst. Nat., ed. 13, p. 3536 (refers to Valentyn, Knorr, Martini and Chemnitz, *op. cit.*, figs. 1532-35 (Hab:?).
1798. *Purpura onagrina* var. b Röding, Mus. Bolten., p. 139 (refers to Chemnitz, *op. cit.*, figs. 1532-35)
1843. *Murex purpura* Deshayes in Deshayes & Edwards, Hist. nat. anim. s. vert., ed. 2, 9: 595, footnote (among other references, cites Chemnitz, *op. cit.*, figs. 1532-35).

Dimensions of syntype (Chemnitz figs. 1532-33): 55.0 x 32.4 mm.

Only the large specimen from the Spengler collection is extant at the Museum. The species is widely distributed throughout the tropical Indo-Pacific.

Family BUCCINIDAE

Siphonalia varicosa (Röding, 1798)

(Fig. 53)

1788. "*Murex varicosus*" Chemnitz, Syst. Conch. Cab., 10: 256, pl. 162, figs. 1546-47 (Cape of Good Hope = error?) [*non binom.*]
1798. *Neptunea varicosa* Röding, Mus. Bolten., p. 116 (refers to Chemnitz, *op. cit.*, figs. 1546-47).
1802. *Murex varicosus* Holten, Enum. syst. Conchyl. Chemnitzii, p. 63 (refers to Chemnitz, *op. cit.*, fig. 1546).

Dimensions of syntype: 37.7 x 22.0 mm; shell with 8 axial ribs on each of the last 2 whorls, 12 spiral threads on the penultimate and 30 on the body whorl, columella smooth, edge of outer lip plicate.

Chemnitz (*op. cit.*) described the species from South Africa, but it has not been reported in subsequent faunal lists from that area. Thiele (1929) and Wenz (1941) report the species from Peru, the former with a query. Winkworth (1943), who

unnecessarily designated *Murex varicosus* as the type-species of *Pseudoneptunea* Kobelt, 1882, states that the species has been taken by Archer living near Singapore and adds that it has been recorded from Surabaya, Indonesia, by Oostingh. Vokes (1971), who retains Holten's authorship for the species, reports it from Peru, but Keen (1971) does not list the species.

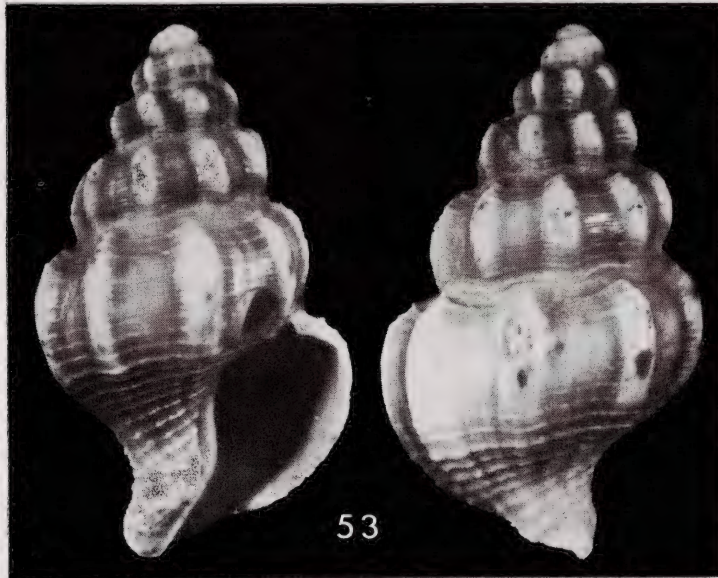


Fig. 53. Syntype of *Siphonalia varicosa* (Röding); length 37.7 mm.

Family MELONGENIDAE

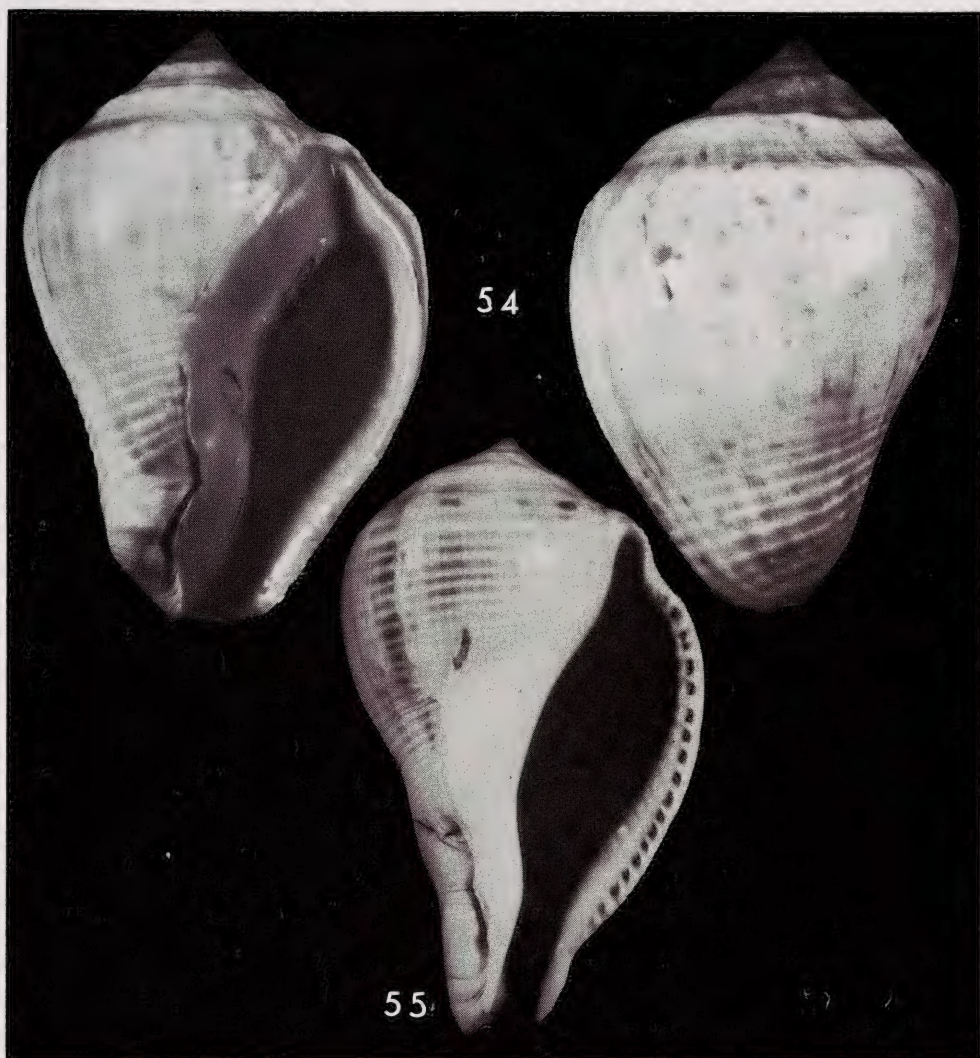
Volema pyrum (Gmelin, 1791)

(Figs. 54, 55)

1777. "*Pyrum paradisiacum*" Martini, Syst. Conch. Cab., 3: 202, pl. 94, figs. 909-10 (Coast of Coromandel and Red Sea) [*non binom.*]
1791. *Buccinum pyrum* Gmelin, Syst. Nat., ed. 13, p. 3484 (refers to Martini, *op. cit.*, figs. 909-10) [India and Red Sea].
1798. *Volema paradisiaca* Röding, Mus. Bolten., p. 58, (refers to Martini, *op. cit.*, figs. 909-10).
1817. *Pugilina laevis* Schumacher, Essai nouv. syst., p. 216 (refers to Martini, *op. cit.*, figs. 909-10).
1822. *Pyruca citrina* Lamarck, Hist. nat. anim. s. vert., 7: 146 (refers to Martini, *op. cit.*, figs. 909-10).

Dimensions of holotype: 41.3 x 27.7 mm; shell with 6 spiral threads at the suture and c. 14 threads at the base of the body whorl, shoulder concave, aperture heavily calloused and orange in colour, outer lip plicate,² columella smooth.

The species lives in the Western Indian Ocean and the Red Sea. The specimen subsequently illustrated by Chemnitz from the Red Sea (Martini & Chemnitz 1795, vol. 11, pl. 193, figs. 1854-55), and apparently not cited by subsequent authors, is an immature, smooth, dark-lined variant of *V. pyrum* (Fig. 55). This variant has been described as *Buccinum spadiceum* Gmelin, 1791, and var. *undata* Dautzenberg, 1929 (*undata* Dautzenberg, 1923, being a *nomen nudum*).



Figs. 54, 55. *Volema pyrum* (Gmelin). 54. Holotype, length 41.3 mm. 55. Specimen illustrated by Chemnitz (vol. 11, pl. 193, figs. 1854-55), length 70.0 mm.

Iredale (1917) designated *Volema paradisiaca* Röding, 1798, as the type-species of *Volema* Röding, 1798; this species is an objective synonym of *Buccinum pyrum* Gmelin and not *Murex ficus* Gmelin, 1791 (non Linnaeus, 1758) as suggested by Clench & Turner (1956). The inclusion of 2 species in the genus *Pugilina* Schumacher, 1817 (i.e. *P. laevis* and *P. fasciata*, both of Schumacher, 1817) invalidates a type designation by monotypy (Clench & Turner, 1956). The type-species of *Pugilina* Schumacher is "*Fusus morio* L." by subsequent designation by Herrmannsen (1848), a species cited (as *Murex morio* Linnaeus) by Schumacher (*op. cit.*) in the synonymy of his *Pugilina fasciata*.



Figs. 56, 57. 56. Syntype of *Fusinus ansatus* (Gmelin); length 131.3 mm. 57. Syntype of *Latirus amplustris* (Dillwyn); length 42.0 mm.

Family FASCIOLARIIDAE

Fusinus ansatus (Gmelin, 1791)

(Fig. 56)

1780. "*Fusu lineatus fuscus*" Chemnitz, Syst. Conch. Cab., 4: 179, pl. 144, fig. 1340 (Hab:?) [non binom.]

1791. *Murex ansatus* Gmelin, Syst. Nat., ed. 13, p. 3556 (refers to Regenfuss, vol. 1, pl. 12, fig. 62 and Chemnitz, *op. cit.*, fig. 1340) [Hab:?].

1798. *Syrinx maculata* Röding, Mus. Bolten., p. 122 (refers to Chemnitz, *op. cit.*, fig. 1340).

Dimensions of syntype: 131.3 x 48.8 mm; shell with 11 spiral cords on the penultimate whorl and a row of nodes which are stained with brown in the interspaces, columella and outer lip plicate.

The species ranges from the Philippine Islands westward into the Indian Ocean. *Fusus distans* Lamarck, 1822, appears to be the same species.

Latirus amplustris (Dillwyn, 1817)

(Fig. 57)

1795. "*Murex amplustris*" Chemnitz, Syst. Conch. Cab., 11: 119, pl. 191, figs. 1841-42 (Tonga Ids.) [non binom.]

1817. *Murex amplustre* Dillwyn, Desc. cat. Rec. shells, 2: 735 (refers to Chemnitz, *op. cit.*, figs. 1841-42 and Martyn, 1784, vol. 1, pl. 3) [N.W. coast of America = error, and Tonga Ids.].

Dimensions of syntype: 42.0 x 24.2 mm.

The N.W. American locality cited by Dillwyn (1817) is erroneous, and the species lives in the tropical Indo-Pacific.

Family MITRIDAE

Mitra (Nebularia) aurantia (Gmelin, 1791) (Fig. 58)

1780. "*Turricula arasiaca*" Chemnitz, Syst. Conch. Cab., 4: 231, pl. 150, figs. 1393-94 (Hab:?) [non binom.]
1791. *Voluta aurantia* Gmelin, Syst. Nat., ed. 13, p.3454 (refers to Chemnitz, *op. cit.*, figs. 1393-94) [Hab:?].
1798. *Mitra minuta* Röding, Mus. Bolten., p. 137 (refers to Chemnitz, *op. cit.*, figs. 1393-94).

Dimensions of holotype: 28.2 x 13.2 x 17.1 mm; specimen faded orange, spirally striate, outer lip crenulate, columella with 4 oblique folds.

This is the species which was subsequently described as *Mitra aurantiaca* Lamarck, 1811 and *M. crassa* Swainson, 1822. The species has an Indo-Pacific distribution.

Family VEXILLIDAE

Vexillum (Costellaria) virgo (Linnaeus, 1767) (Fig. 59)

1767. *Voluta virgo* Linnaeus, Syst. Nat., ed. 12, p. 1192 (Hab:?); 1791 Gmelin, Syst. Nat., ed. 13, p. 3450 (Hab:?); 1955 Dodge, Bull. Americ. Mus. Nat. Hist., 107 (1): 105.
1791. *Voluta cruentata* Gmelin, Syst. Nat., ed. 13, p. 3453 (Indian Ocean).
1811. *Mitra harpifera* Lamarck, Ann. Mus. d'Hist. Nat. Paris, 17:217 (Indian Ocean).
1822. *Mitra harpaeformis* Lamarck, Hist. nat. anim. s. vert., 7: 319.

Dimensions of 3 syntypes: 22.5 x 8.0 x 11.0 mm; other 2 syntypes length 19.0 mm and 18.0 mm.

Voluta virgo Linnaeus, has always been considered a *nomen dubium* since no illustrations were cited and the locality was unknown. The taxonomic problem surrounding *V. virgo* was discussed in detail by Dodge (1955). Linnaeus (1767) acknowledged receiving specimens of *V. virgo* from Spengler, and 3 syntypes of the species with the Linnaean "Systema" number 416 added in Spengler's handwriting, are present in the Zoological Museum, Copenhagen. These syntypes are the Indo-Pacific species *Vexillum (Costellaria) cruentatum* (Gmelin, 1791) [= *M. harpifera* and *M. harpaeformis* of Lamarck], which displays the diagnostic features of blood-red axial ribs on at least the sutural nodes, and mentioned as "linea sanguinea" in Linnaeus' diagnosis.

Despite the fact that *Voluta virgo* Linnaeus, is considered an unused senior synonym (Dodge's 1955 usage does not qualify, since the name has not been applied to a valid taxon), it will, after all, replace the later *V. cruentata* Gmelin. The latter taxon has been used only 3 times by 2 different authors during the preceding 50 years and falls considerably short of the 10 times usage by 5 different authors of the current requirement of the Code of I.C.Z.N.

Vexillum (Costellaria) granosum (Gmelin, 1791) (Fig. 60)

1788. "*Voluta granosa*" Chemnitz, Syst. Conch. Cab., 10: 173, pl. 151, figs. 1442-43 (East Indian Seas) [non binom.]
1791. *Voluta granosa* Gmelin, Syst. Nat., ed. 13, p. 3453 (refers to Chemnitz, *op. cit.*, figs. 1442-43) [Indian Ocean].



Figs. 58-61. 58. Holotype of *Mitra (Nebularia) aurantia* (Gmelin); length 28.2 mm. 59. Syntype of *Vexillum (Costellaria) virgo* (Linnaeus); length 22.5 mm. 60. Holotype of *V. (C.) granosum* (Gmelin); length 29.7 mm. 61. Holotype of *V. (Pusia) patriarchalis* (Gmelin); length 22.0 mm.

1798. *Mitra cancellata* Röding, Mus. Bolten., p. 138 (refers to Chemnitz, *op. cit.*, figs. 1442-43).

Dimensions of holotype: 29.7 x 9.2 x 14.2 mm.

This well-known species is widely distributed throughout the tropical Indo-Pacific and ranges from Zanzibar to the Fiji Islands.

Vexillum (Pusia) patriarchalis (Gmelin, 1791) (Fig. 61)

1788. "*Voluta corono patriarchalis*" Chemnitz, Syst. Conch. Cab., 10: 166, pl. 150, figs. 1425-26 (East Indian Seas) [*non binom.*]
1791. *Voluta patriarchalis* Gmelin, Syst. Nat., ed. 13, p. 3460 (refers to Chemnitz, *op. cit.*, figs. 1425-26) [Indian Ocean].

Dimensions of probable holotype: 22.0 x 13.3 x 12.3 mm; shell faded and worn.

The probable type-specimen has lost its usually prominent spines due to wear. The species lives in the tropical Indo-Pacific.

Family TURRIDAE

Perrona perron (Gmelin, 1791) (Fig. 62)

1788. "*Murex perron*" Chemnitz, Syst. Conch. Cab., 10: 278, pl. 164, figs. 1573-74 (South Seas = error) [*non binom.*]
1719. *Murex perron* Gmelin, Syst. Nat., ed. 13, p. 3559 (refers to Chemnitz, *op. cit.*, figs. 1573-74 and Davila, vol. 1, pl. 5, fig. I) [Southern Ocean = error].
1817. *Perrona tritonum* Schumacher, Essai nouv. syst., p. 218 (refers to Chemnitz, *op. cit.*, figs. 1573-74).

Dimensions of syntype: 35.2 x 14.0 x 19.1 mm; five postnuclear whorls with oblique axial ribs, lower half of body whorl with 9 main spiral cords and additional finer intermediate threads.

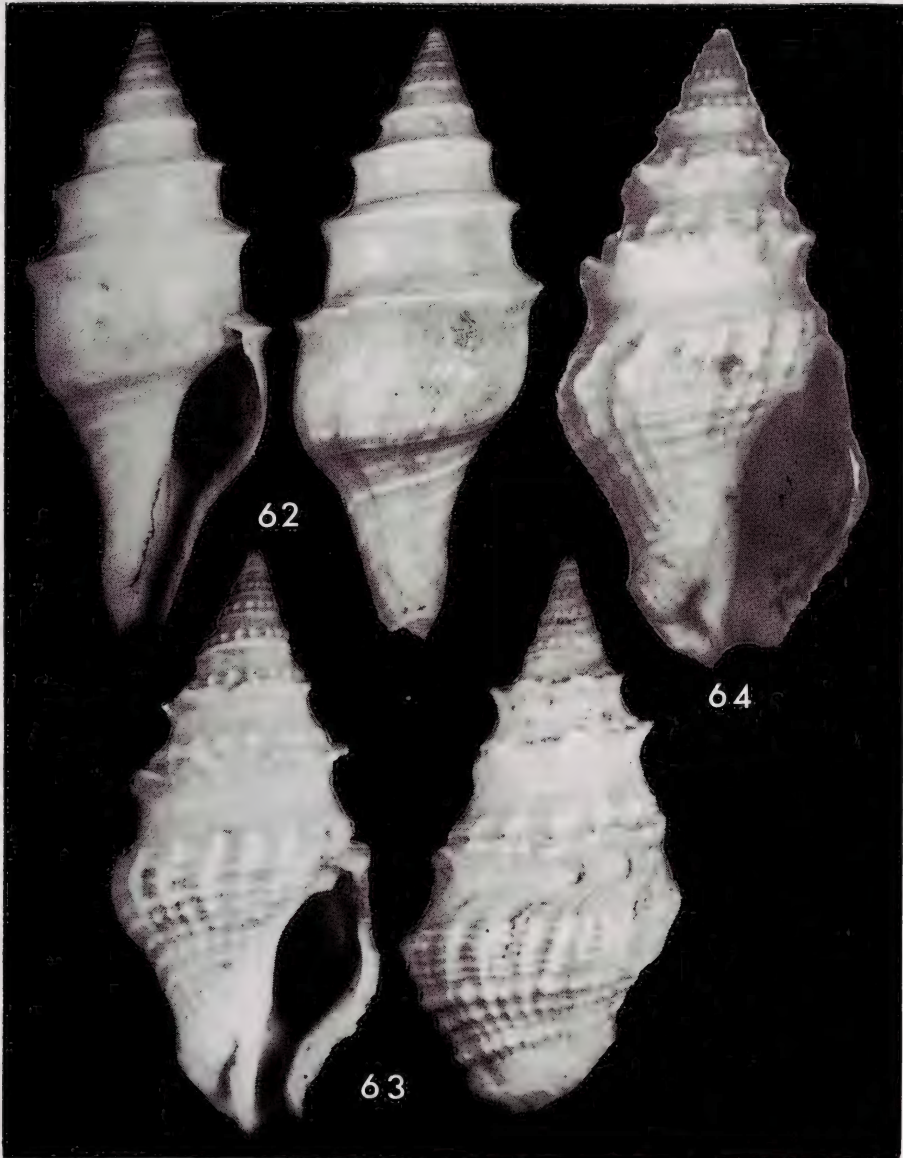
The species most probably lives in West Africa but this locality has not been substantiated by either literature records or authentic specimens. Another possibility is that *Murex perron* is conspecific with *Pleurotoma spirata* Lamarck, 1816, as suggested by Nordsieck (1968), although the two species appear quite distinct.

Clavatula regia (Röding, 1798) (Figs. 63, 64)

1780. "*Turris babylonica coronata*" Chemnitz, Syst. Conch. Cab., 4: 176, vignette 39, fig. C (probably East Indies = error) [*non binom.*]
1798. *Turris regia* Röding, Mus. Bolten., p. 124 (refers to Chemnitz, *op. cit.*, vig. 39, fig. C).
1816. *Pleurotoma conica* Lamarck, Tabl. Encycl. Méth., p. 9, pl. 439, figs. 9a, b.
1817. *Murex clavatulus* Dillwyn (*pars*), Desc. cat. Rec. shells, 2: 713 (among other references cites Chemnitz, *op. cit.*, vig. 39, fig. C) [coasts of Guinea].
1822. *Pleurotoma muricata* Lamarck, Hist. nat. anim. s. vert., 7: 91 (Hab:?).
1852. *Pleurotoma (Clavatula) coronata* Mörch, Cat. Conchyl. Yoldi, 1: 72 (refers to Chemnitz, *op. cit.*, vig. 39, fig. C) [*non* Muenster, 1844; *nec Clavatula coronata* Lamarck, 1801].

Dimensions of 3 syntypes: 37.4 x 16.6 x 17.7 mm; other two syntypes length 41.5 mm and 35.8 mm.

The species lives in West Africa and is generally cited as *Clavatula muricata* (Lamarck) in literature. Chemnitz (Martini & Chemnitz 1795) stated that his illustrations in vol. 11, plate 190, figs. 1831-32 are re-drawn figures of the species represented in Chemnitz, vol. 4, vignette 39, fig. C. Figures 1831-32 were Dillwyn's first citation for his *Murex clavatulus*. The 2 syntypes of *Pleurotoma conica* Lamarck, which are also the syntypes of *P. muricata* Lamarck, are in the Muséum d'Histoire Naturelle, Geneva, no. 1097/49/1 (Fig. 64).



Figs. 62-64. 62. Syntype of *Perrona perron* (Gmelin); length 35.2 mm. 63, 64. *Clavatula regia* (Röding). 63. Syntype, length 37.4 mm. 64. Syntype of *Pleurotoma conica* Lamarck and *P. muricata* Lamarck (Mus. d'Hist. Nat. Geneva, No. 1097/49/1); length 45.5 mm, width 22.2 mm.

Family CONIDAE

Conus tenellus Holten, 1802

(Fig. 65)

1792. *Conus nimbosus* Hwass in Bruguière, Encycl. Méth. vers, pt. 2, p. 732.

1795. "*Conus tenellus*" Chemnitz, Syst. Conch. Cab., 11: 64, pl. 183, figs. 1782-83 (Moluccas) [*non binom.*]



Figs. 65, 66. 65. Holotype of *Conus tenellus* Holten; length 33.6 mm. 66. Syntype of *C. cinereus* var. *C* Hwass in Bruguière; length 43.0 mm.

1802. *Conus tenellus* Holten, Enum. syst. Conchyl. Chemnitzii, p. 39 (refers to Chemnitz, *op. cit.*, figs. 1782-83); 1817 Dillwyn, Desc. cat. Rec. shells, 1: 417 (same reference).

Dimensions of holotype: 33.6 x 15.8 x 30.8 mm.

The species illustrated as "*Conus tenellus* Dillwyn" by Marsh & Rippingale (1964) is not the *C. tenellus* of either Dillwyn or Holten. The extant type-specimen of *C. tenellus* is the same species as the Indo-West Pacific *C. nimbosus* Hwass in Bruguière, 1972.

Conus cinereus Hwass in Bruguière, 1792 (Fig. 66)

1788. "*Conus monachus franciscanus*" Chemnitz, Syst. Conch. Cab., 10: 68, pl. 142, fig. 1319 (East Indies) [*non binom.*]
1791. *Conus monachus* var. b Gmelin, Syst. Nat., ed. 13, p. 3382 (refers to Chemnitz, *op. cit.*, 1319-20) [non Linnaeus, 1758].
1792. *Conus cinereus* var. C Hwass in Bruguière, Encycl. Méth. vers, p. 674 (among other references cites Chemnitz, *op. cit.*, fig. 1319).
1817. *Conus rusticus* var. C Dillwyn, Desc. cat. Rec. shells, 1: 387 (refers to Chemnitz, *op. cit.*, fig. 1319) [non Linnaeus, 1758].

Dimensions of syntype: 43.0 x 21.0 mm.

No separate name appears to have been proposed for the specimen illustrated in Chemnitz's figure 1319. The specimen figured by Chemnitz (*op. cit.*) is *Conus cinereus* Hwass in Bruguière, 1792 from the Indian Ocean.

Family VENERIDAE

Meretrix lusoria (Röding, 1798) (Fig. 67)

1782. "*Venus lusoria japonica*" Chemnitz, Syst. Conch. Cab., 6: 337, pl. 32, fig. 340 (coasts of China and Japan) [*non binom.*]
1798. *Venus lusoria* Röding, Mus. Bolten., p. 180 (refers to Chemnitz, *op. cit.*, fig. 340).

Dimensions of syntype: 60.0 x 73.7 mm.

Both valves have an identical scene painted on the interior in blue, gold, green, red and black. Chemnitz (1782) devotes considerable space in his description to explanations of usage of these painted bivalves in Chinese and Japanese games. The species occurs in the Sino-Japanese region and is probably conspecific with *Meretrix meretrix* (Linnaeus, 1758).

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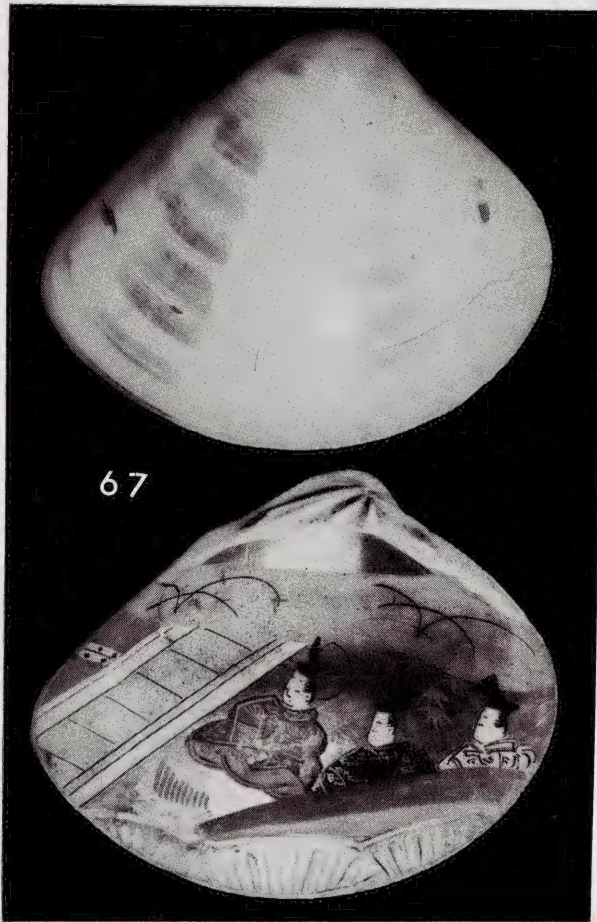


Fig. 67. Syntype of *Meretrix lusoria* (Röding); height 60.0 mm.

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